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Simultaneous Laparoscopic Cholecystectomy and Combined Endoscopic and Laparoscopic Surgery for an Endoluminal Tumor of the Sigmoid Colon: A Case Report

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Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Conflict of interest: None declared

Patient: Female, 70
Final Diagnosis: An endoluminal tumor
Symptoms: Abdominal pain
Medication: —
Clinical Procedure: —
Specialty: Gastroenterology and Hepatology

Objective: Unusual or unexpected effect of treatment

Background: One treatment for colon endoluminal tumors is endoscopic resection, i.e., endoscopic mucosal resection (EMR). In this report we describe a case of an endoluminal tumor resected safely and completely by combined endoscopic and laparoscopic surgery (CELS).

Case Report: A 70-year-old female was admitted to our hospital for cholelithiasis, and we planned a cholecystectomy. She had a surgical history for endometrial cancer, and she was taking amlodipine 2.5 mg/day for hypertension. A preoperative colonoscopy for screening revealed an 18-mm endoluminal tumor in the sigmoid colon. We tried to resect it by EMR, but flexion of the colon, which was considered to be due to adhesion from the former surgical treatment, was severe, so it was difficult to resect the endoluminal tumor by endoscopy. We conducted laparoscopic cholecystectomy and sigmoid colon mobilization. Sigmoid colon flexion was released, enabling us to conduct EMR to the endoluminal tumor. No intraoperative or postoperative complications were observed.

Conclusions: CELS can make an endoluminal tumor resectable by EMR without colon resection, and performing simultaneous CELS and laparoscopic cholecystectomy is less invasive.

MeSH Keywords: Cholecystectomy • Endoscopy • Laparoscopy

Abbreviations: **LST** – laterally spreading tumor; **EMR** – endoscopic mucosal resection; **CELS** – combined endoscopic and laparoscopic surgery

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Background

Endoscopic mucosal resection (EMR) is considered a proper treatment for pre-malignant lesions or for early colon cancers if the histopathological findings are high-grade dysplasia or well-to-moderately differentiated with no vascular or lymphatic infiltration, with enough resection margin and no deep submucosal infiltration [1]. On the other hand, colon resection remains the mainstay of treatment of endoluminal tumors of the colon that are not amenable to endoscopic resection. In our patient's case, combined endoscopic and laparoscopic surgery (CELS) was the procedure we used to avoid colon resection. One of the technical variations of CELS for removing difficult colon endoluminal tumors is laparoscopic-assisted endoscopic resection [2]. There have been no reports of simultaneous laparoscopic cholecystectomy and CELS for an endoluminal tumor. Here, we describe the case of an endoluminal tumor resected safely and completely by CELS without colon resection using almost the same ports and wound of standard laparoscopic cholecystectomy.

Case Report

The patient was a 70-year-old female who presented to our hospital with chronic upper left abdominal pain. On examination, she was 152.0 cm tall and weighed 75.0 kg (body mass index, 32.46 kg/m^2). All hematological values were within normal range, and her vitals were stable. On admission, she had no tenderness on palpation. She had a surgical history for endometrial cancer; therefore, there was a midline incision scar from the upper to the lower abdomen. She was taking amlodipine 2.5 mg/day for hypertension.

The ultrasonogram and screening computed tomography scan revealed several gallstones. Thus, she was diagnosed as having cholelithiasis, and we planned a laparoscopic cholecystectomy. Preoperative screening colonoscopy revealed an endoluminal tumor with an 18-mm diameter in the sigmoid colon (Figure 1). We tried to resect the endoluminal tumor by EMR, but flexion of the colon, which was considered due to adhesion from the former surgical treatment, was severe, so it was difficult to resect the endoluminal tumor by endoscopy.

We conducted laparoscopic cholecystectomy for cholelithiasis and then CELS for the endoluminal tumor. The patient was placed in the lithotomy position and head-high position, with the head rotated to the left. The operator was on the left side, and the assistant was on the right side. A 12-mm trocar at the upper midline was used for the laparoscope, and two 5-mm ports in the right upper and lower quadrants and two additional 5-mm ports in the left upper and lower quadrants were placed. Laparoscopic coagulating shears were used

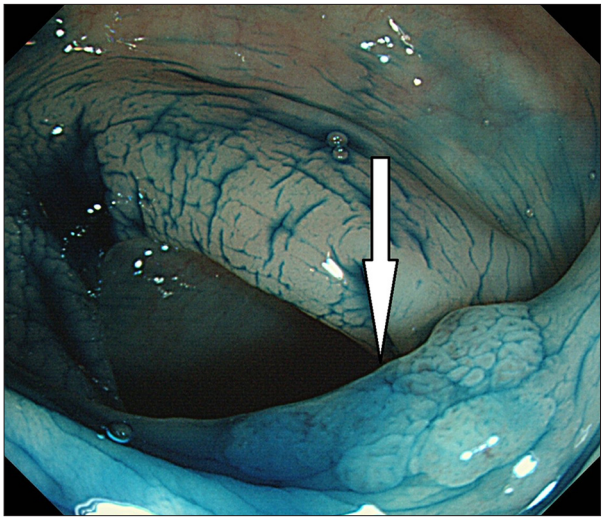

Figure 1. Preoperative colonoscopy showing an 18-mm laterally spreading tumor (LST) in the sigmoid colon. Flexion of the colon is severe, making it difficult to resect the LST by endoscopy (white arrow).

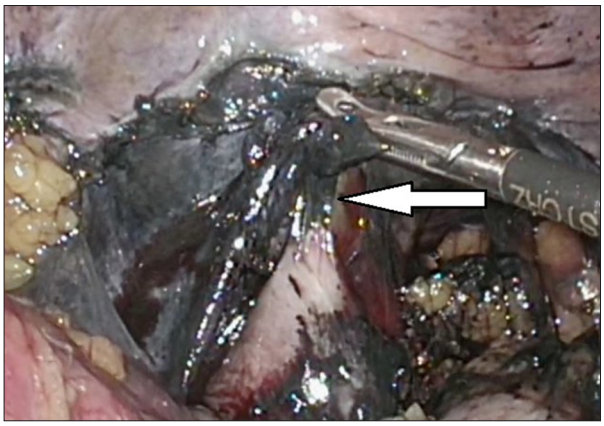

Figure 2. Laparoscopic mobilization of the sigmoid colon (white arrow).

as laparoscopic energy device. From the upper to lower midline abdominal wall, the omentum and small intestines were firmly adhered, so we resected the omentum. First, we performed a cholecystectomy. Second, we performed a CELS for the endoluminal tumor. Adhesion of the small intestine surrounding the sigmoid colon was severe; therefore, we mobilized the sigmoid colon while confirming that the light of the colonoscope passed through the sigmoid colon wall (Figure 2). Flexion of the sigmoid colon was released, enabling us to conduct the EMR for the endoluminal tumor (Figures 3, 4). No drainage tubes were placed.

The operative time was 244 minutes. There was very little blood loss, and no intraoperative complications occurred.

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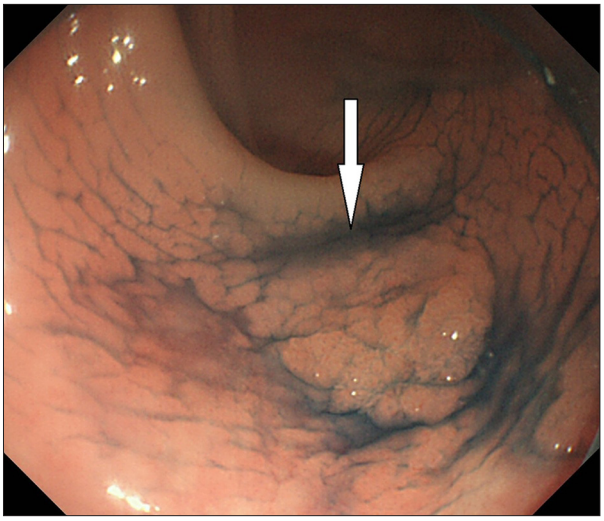

Figure 3. Flexion of the sigmoid colon is released, enabling us to visualize the laterally spreading tumor in the front view (white arrow).

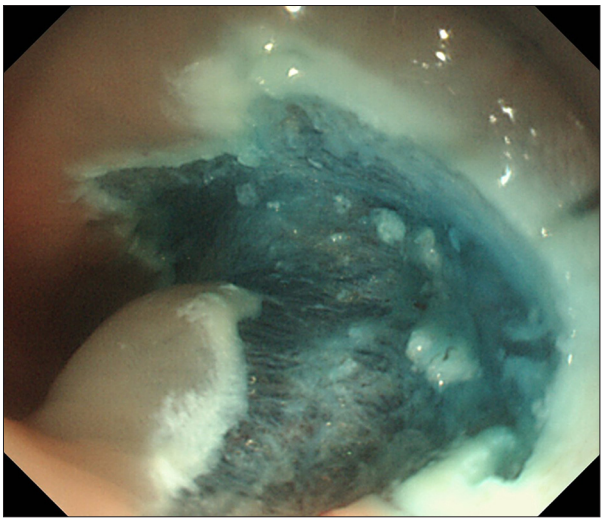

Figure 4. Endoscopic mucosal resection of the laterally spreading tumor.

The patient was discharged on postoperative day 3 with no complications.

The microscopic examination, with hematoxylin-eosin staining, demonstrated cholelithiasis in the gallbladder and a tubular adenoma in the endoluminal tumor. The horizontal and vertical resection margin was negative

Sixteen months postoperatively, the patient had no postoperative complications.

Discussion

Prevention of colorectal cancer depends on the detection and removal of adenomatous polyps, which are now known to be precursors to malignancy [3]. EMR is a proper treatment for such a pre-malignant lesions or for early colon cancers if the histopathological findings are high-grade dysplasia or well-to-moderately differentiated with no vascular or lymphatic infiltration, and with enough resection margin and no deep submucosal infiltration [1]. However, about 10–15% of all polyps are difficult polyps, which are challenging even to the most advanced endoscopist. They may be difficult to resect due to factors related to size, configuration, or location in the colon [4]. In such cases, combined endoscopic and laparoscopic surgery, especially laparoscopic-assisted polypectomy can be good approach for polyp resection. The method of laparoscopic-assisted polypectomy allows presenting the polyps to the endoscopist using laparoscopic instruments. This often involves straightening curves and mobilizing flexures which may have prevented the polypectomy if done by colonoscopy [5]. This method can prevent segmental colon resection and anastomosis.

Anastomotic leakage is one of the most feared complications of colorectal surgery. In previous reports, rates of anastomotic leakage vary between 1% and 23%, and experienced colorectal surgeons often report 3% to 6% as an acceptable overall leakage rate [6]. Besides many negative impacts on the patient's morbidity, mortality, and quality of life, anastomotic leakage is also associated with higher tumor recurrence rates and poor survival [7]. It is very beneficial for patients if colon resection and anastomosis can be avoided.

The risk of intraoperative complications of CELS are related to laparoscopic port placement and mobilization of the colon or to the endoscopic portion of the treatment. The most serious endoscopic complication is perforation. An advantage of CELS is that any perforation of the colon from scope injury, barotrauma, or electrocautery can be instantly recognized and repaired [8]. An additional advantage of CELS is that a test for leakage can be performed to assess the injury and repaired point of the colon [9]. The risks of laparoscopic complications of CELS are: injury of abdominal wall and intra-abdominal organ by port placement, colon injury by grasper trauma, or injury of colon, ureter, or iliac or gonadal vessels by an energy device [9]. Richard et al. [10] reported 10.5% of patients undergoing adhesiolysis inadvertently incurred bowel defects, so clinicians need to consider this when a patient has a history of abdominal surgery.

The rate of postoperative complications of CELS has been reported in a number of studies. Franklin and Portillo [11] reported a postoperative complication rate of 9%, with no major complications and most of the reported complications were

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seroma, atelectasis, and ileus. Lee et al. [12] reported a complication rate of 4.2%, and most of the complications were wound hematoma or urinary retention. Crawford et al. [2] and Lee et al. [12] reported rates of 10% and 9.2%, respectively. Both intraoperative and postoperative complications occurred in their CELS studies; additionally, they reported that the majority of complications were minor, and no complications resulted in long-term sequelae or the need for reoperation.

In our present case study, the appropriate treatment for the endoluminal tumor of the sigmoid colon was EMR, but flexion of the colon due to adhesion was severe; thus, it was difficult to resect the endoluminal tumor by EMR. By only conducting mobilization of the sigmoid colon, it was possible to resect the endoluminal tumor by EMR. Moreover, the ports and wound created for the EMR were almost similar to those of standard laparoscopic cholecystectomy, so it was less invasive to perform the EMR after the cholecystectomy. No intraoperative or postoperative complications were observed, and we were able to conduct simultaneous surgery of CELS and cholecystectomy safely.

Conclusions

If surgeons come across a case of an endoluminal tumor that is difficult to resect by EMR because of severe flexion of the colon due to adhesion, they should consider laparoscopic mobilization. By using almost the same ports and wound of a cholecystectomy, it is possible to conduct CELS safely and less invasively.

Acknowledgements

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Conflict of interests

None.

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