

Early gastric cancer with three gastric gastrointestinal stromal tumors combined with synchronous colon cancer: A case report

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Case report

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Abstract

Background: This study presented a rare case of early gastric cancer (EGC) with multiple gastric gastrointestinal stromal tumors (GISTs) combined with synchronous colon cancer and to discuss the progress of treatment in this disease.

Case presentation: We report our experience with a case of multiple tumors, which were found at the same time in the abdomen. The patient was a 77-year-old man who was referred for a gastric GIST. Esophagogastroduodenoscopy showed the known lesion (a gastric GIST) on the lesser curvature of the high body and a new lesion on the lesser curvature of the low body with suspicion of EGC. A computed tomographic scan confirmed the presence of a GIST in the stomach and revealed two new lesions. One was suspected to be a 4 cm submucosal tumor on the anterior wall of the high body of the stomach. The other was a wall thickening of the descending colon, which demonstrated the possibility of malignancy. Colonoscopy confirmed synchronous colon cancer. Laparoscopic near-total gastrectomy with D1+ lymph node dissection and left hemicolectomy were performed sequentially without significant events. The patient was discharged without any postoperative complications.

Conclusions: We report the case of a rare patient with EGC with multiple gastric GISTs combined with synchronous colon cancer.

Background

The incidence of various primary cancers has increased owing to the increasing age of society and advances in diagnostic imaging technology [1, 2]. In Korea, an organized screening system has significantly improved the prognosis of patients with cancer, especially in the gastrointestinal tract [3]. Simultaneously, synchronous cancers have often been found incidentally in the progress of precise diagnosis. The most common synchronous neoplasm is gastric cancer associated with colorectal cancer, found at a frequency of 20.1–37.2% of all synchronous cancers [4–6]. There have been numerous reports of simultaneous gastric and colorectal cancer [7–9]. However, there have been very few reports of patients with gastric and colorectal cancer combined with gastric gastrointestinal stromal tumors (GISTs). We present a rare case of early gastric cancer (EGC) with three gastric GISTs combined with synchronous colon cancer. We review the relevant literature and discuss feasible methods of treatment for this disease.

Case Presentation

The patient was a 77-year-old man who was admitted to our institution due to a gastric GIST discovered at the local hospital. He first visited the Department of Internal Medicine for an examination. The patient had no specific complaints other than a slight indigestion. A gastric GIST was located on the lesser curvature of the high body. The tumor diameter was approximately 5 cm in

esophagogastroduodenoscopy (EGD) findings conducted at the local hospital. He had hypertension, which was well controlled by medication. He had no significant surgical or family history.

On physical examination, the patient's vital signs, including blood pressure, heart rate, body temperature, respiratory rate, and oxygen saturation at room air, were normal. There were no specific findings in abdominal examinations. Another EGD was performed, which showed the known lesion (a gastric GIST) on the lesser curvature of the high body and a new flat elevated lesion on the lesser curvature of the low body, with suspicion of EGC (Fig. 1). A computed tomographic scan confirmed the presence of a GIST in the stomach (Fig. 2A) and revealed two new lesions. One was suspected to be a 4-cm submucosal tumor on the anterior wall of the high body of the stomach (Fig. 2B). The other was a wall thickening of the descending colon, which demonstrated the possibility of malignancy (Fig. 2C). Upon colonoscopy, a 3 cm ulceroinfiltrative mass was observed from 25 to 28 cm above the anal canal (Fig. 3). Positron emission tomography showed no distant metastasis, including in the liver and both lung fields. Biopsy results represented two gastric GISTs with spindle cell neoplasm and synchronous gastric and colon cancer with well-differentiated adenocarcinoma. We decided to perform cooperative laparoscopic surgery. There were no significant findings from the laboratory examination, including blood chemistry, routine blood tests, and tumor markers.

The patient was taken to the operating theater for laparoscopic surgery. The procedure was performed according to the standard laparoscopic procedure, and the first 12 mm port was inserted through the umbilicus. For gastrectomy, two operator ports were made on the right upper side of the patient (upper port = 5 mm and lower port = 12 mm). Additional ports were inserted into the right lower (12 mm) and left lower (12 mm) area for colectomy. Laparoscopic near-total gastrectomy with D1 + lymph node dissection and left hemicolectomy were performed sequentially without significant events. Both specimens were removed through the umbilicus by extending the incision of the umbilical port. In the stomach specimen, we found a 1 cm incidental lesion of a submucosal tumor located on the greater curvature of the high body (Fig. 4). After the surgery, the patient proceeded with sips of water on the second day and began a soft diet on the fourth day. He was discharged seven days after the surgery without immediate complications. On the follow-up appointment, the patient was stable without any symptoms and did not require any adjuvant systemic chemotherapy.

Histopathological examination of the EGC revealed a well-differentiated adenocarcinoma with negative resection margins, staged IA (T1aN0M0), according to the American Joint Committee on Cancer 8th edition [10]. Three gastric GISTs (5.5 cm, 4 cm, and 1 cm) posed an intermediate risk based on the modified National Institutes of Health classification system (mitotic index, $\leq 5/50$ high-power fields). The immunohistochemical findings were c-KIT (+), CD34 (+), DOG-1 (+), S-100 (-), desmin (-), and low proliferative activity of Ki-67 (Fig. 5). The descending colon lesion was identified as a well-differentiated adenocarcinoma with negative resection margins, staged IIA (T3N0M0) with low risk. There were no mutations detected in the K-ras, N-ras, and B-raf genes.

Discussion And Conclusions

Synchronous cancer is defined as the simultaneous tumor occurrence in two or more organs or places. In the gastrointestinal tract, the most common combination is gastric cancer associated with colorectal cancer. Eom et al. [4] reported that colorectal cancer found simultaneously with gastric cancer accounts for 20.1% of all synchronous cancers. As a result of the development of diagnostic tools and a well-organized national health insurance system, the detection of gastric cancer, combined with colorectal cancer, has increased in Korea [4,5].

GIST has been known as a submucosal tumor that can occur anywhere from the esophagus to the anus. It occurs most frequently in the stomach (70%) and small intestine (25%) [11]. GIST is diagnosed with an endoscope or computed tomography, and although the treatment may be slightly different depending on the place or size of the tumor, the treatment of choice is surgical resection. There have been several cases in which gastric GIST was found simultaneously with gastric cancer [12,13]. In addition, the mechanism of multiple GISTs has not yet been clarified, but several studies have been reported previously [14,15]. However, to the best of our knowledge, our case is the first to be reported in which EGC with three gastric GISTs combined with synchronous colon cancer was detected.

The patient first came to our hospital for further evaluation of a simple gastric GIST. During repeated diagnostic tests, we accidentally found another gastric GIST, an EGC, and colon cancer. Finally, we detected another GIST in the stomach specimen after surgery. From the diagnosis to the treatment, various departments collaborated. A multidisciplinary approach was performed organically with the Departments of Surgery (Division of Gastrointestinal and Colorectal), Gastroenterology, Radiology, Pathology, and Nuclear Medicine. Close consultation and multidisciplinary care are important parts of modern medicine, and it is even more necessary for patients with multiple cancers. Owing to the development of video conferencing and well-designed cell phone applications, it is possible to ask the opinions of other specialists without being face-to-face.

An EGC could be removed by endoscopic submucosal dissection, and GISTs could be treated by wedge resection. However, two of the GISTs, in this case, were large and positioned in the high body of the stomach. Thus, we were concerned about complications such as a stricture. We decided to perform total gastrectomy for the lesions of the stomach. After performing lymph node dissection, we judged near-total gastrectomy would be possible, leaving a small proximal part of the stomach without esophageal transection. As a result, avoiding the high complications of anastomosis of esophagojejunostomy, the EGC was removed with a sufficient proximal margin, and the GISTs were resected completely. Subsequently, conventional colorectal surgery was performed.

In this case, all procedures were performed by laparoscopy. A long midline incision would have been inevitable if we could not proceed with the laparoscopic technique for gastrectomy and colectomy. This type of incision could lead to many complications, such as increased postoperative pain, reduced ambulation, and increased length of postoperative hospital stay [16]. Laparoscopic surgery has recently become a popular option and has been gradually replacing conventional open surgery in several fields of abdominal surgery. The popularization of three-dimensional scopes, development of automatic linear

staplers, and improvement of surgical skills of surgeons are important factors for the recent trends of laparoscopic surgery. For treating EGCs, the laparoscopic approach has become a treatment of choice according to the domestic guideline [17]. Likewise, laparoscopic surgery is gradually expanding its indication for treating colorectal cancer [18].

Genetic testing may be performed when hereditary colon cancer is suspected when multiple synchronous colorectal cancers occur at the same time at a young age or when concurrent cancers occur in other organs [19]. However, when gastric cancer and colorectal cancer occur simultaneously, both cancers usually have been found to be primary lesions. We could not find any particular genetic mutation in this case, and there are few specific genetic tests in these concurrent cancers [2]. We experienced a rare patient with an EGC with multiple gastric GISTs combined with synchronous colon cancer. In the future, if similar cases are accumulated in several studies, it is necessary to investigate the genetic mutation tests in the case of these synchronous diseases.

Abbreviations

EGC, early gastric cancer, EGD, esophagogastroduodenoscopy, GIST, gastrointestinal stromal tumor

Declarations

Ethics approval and consent to participate: Not applicable

Consent for publication: Written informed consent for publication was obtained from the participant.

Availability of data and material: All data generated or analyzed during this study are included in this published article.

Competing interests: The authors declare that they have no competing interests.

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Authors' contributions: DWK and KN designed the report. SCL and DWK wrote the paper. All authors read and approved the final manuscript.

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Figures

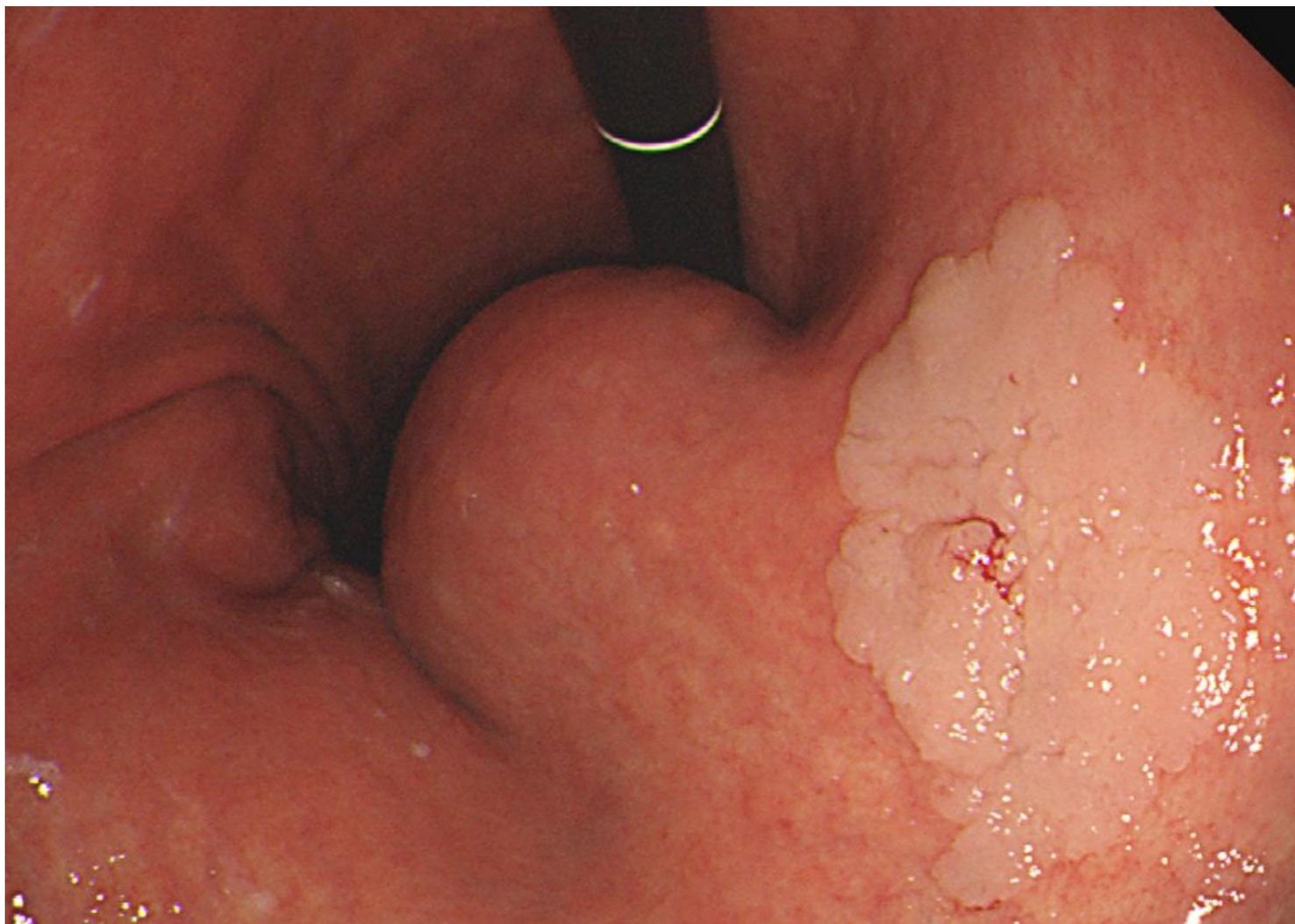


Figure 1

Esophagogastroduodenoscopy showing a submucosal tumor and early gastric cancer.

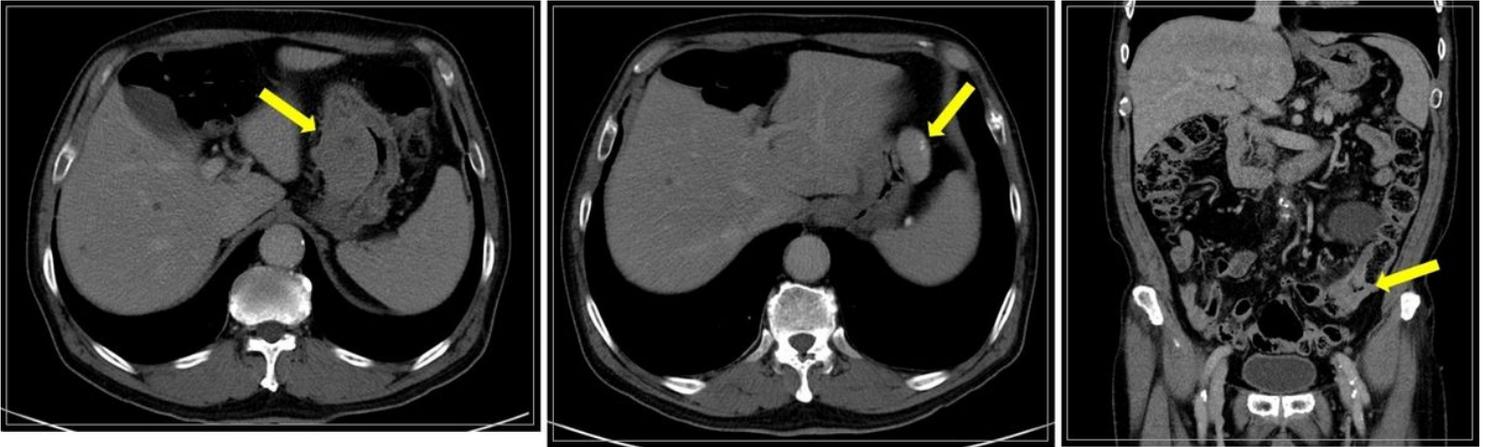


Figure 2

Computed tomographic scan showing the presence of two lesions of submucosal tumor in the stomach and wall thickening of the descending colon. A, mass on the lesser curvature of the stomach; B, mass on the anterior wall of the stomach; C, wall thickening of the descending colon. Yellow arrow indicates the mass.

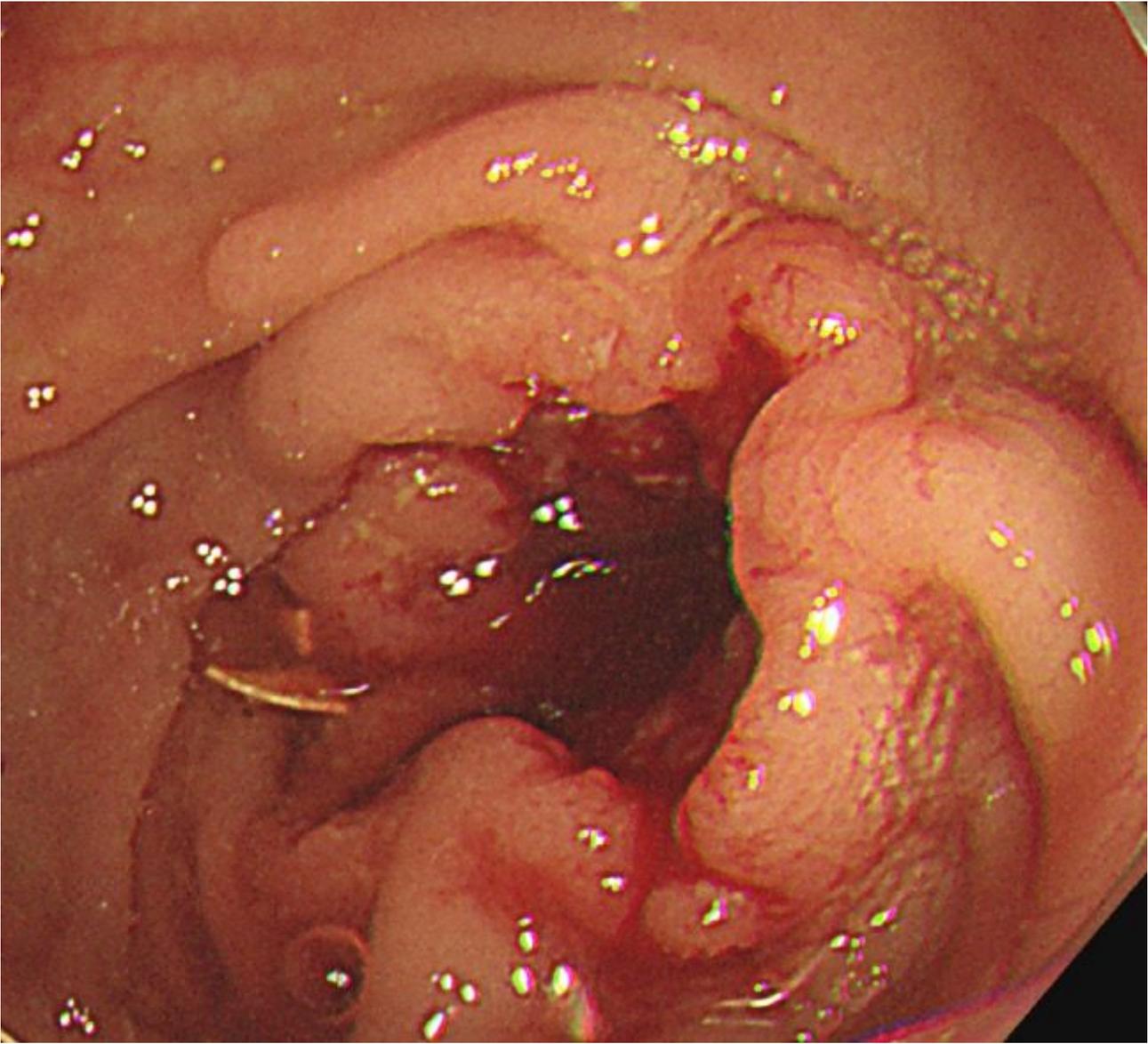


Figure 3

Descending colon cancer was detected by colonoscopy.

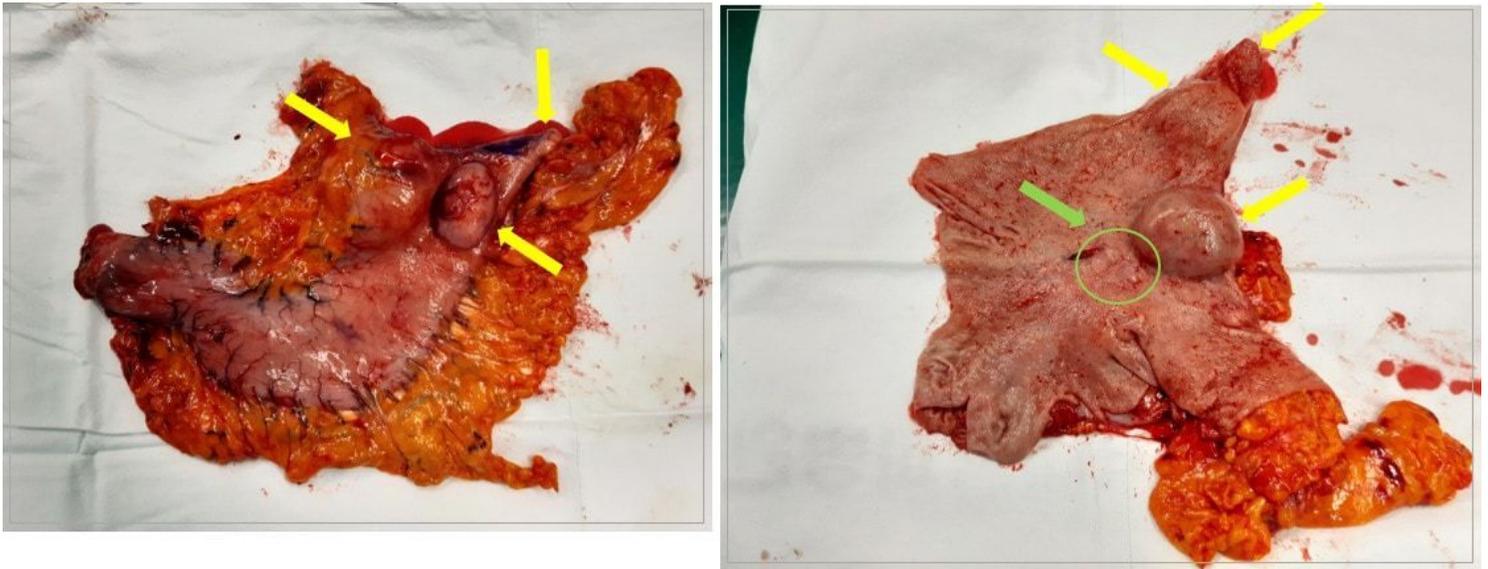


Figure 4

Gross appearance of resected specimen of stomach. A, original specimen; B, specimen opened along the greater curvature (yellow arrows indicate three gastrointestinal stromal tumors; green arrow indicates early gastric cancer).

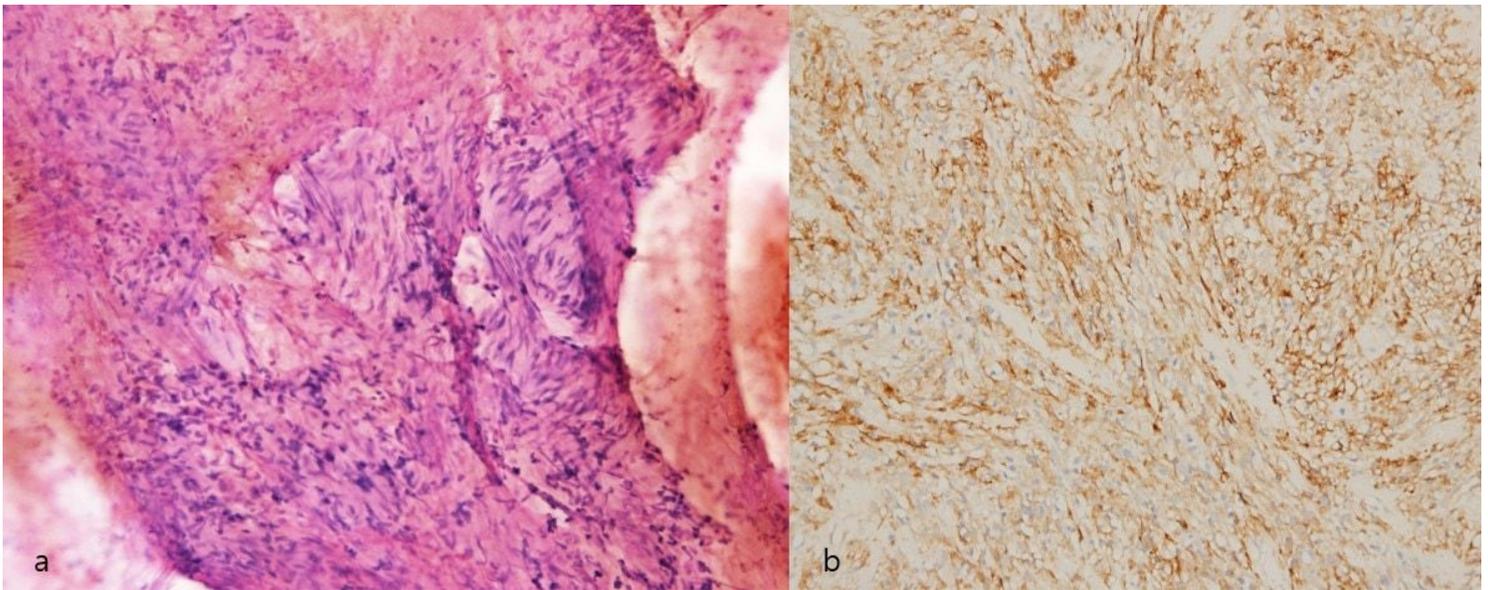


Figure 5

Histopathological examinations of the gastric gastrointestinal stromal tumor. A, hematoxylin and eosin staining (100 \times); B, c-KIT positive in immunohistochemical staining.