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ABOUT COVER

Editor-in-Chief of *World Journal of Gastrointestinal Endoscopy*, Dr. Sang Chul Lee is a Professor in the Department of General Surgery of the College of Medicine, Catholic University of Korea and a Colorectal Surgeon at Daejeon St. Mary's Hospital, which is famous for minimally invasive surgery in Korea. His clinical practice specialization in laparoscopic surgery involves a focus in the field of single-port laparoscopic techniques. His standard and routine operation modality is single-port laparoscopic SOLO surgery, with application in a vast spectrum of disease entities and conducted by use of a camera-holder instead of a human assistant. His ongoing research interests are minimally invasive surgery and endoscopic procedures, and for the last several years, he has been performing completely scar-less surgeries. He serves as editorial board member and reviewer for several scientific journals and has published more than 120 peer-reviewed articles. (L-Editor: Filipodia)

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The primary aim of *World Journal of Gastrointestinal Endoscopy* (WJGE, *World J Gastrointest Endosc*) is to provide scholars and readers from various fields of gastrointestinal endoscopy with a platform to publish high-quality basic and clinical research articles and communicate their research findings online.

WJGE mainly publishes articles reporting research results and findings obtained in the field of gastrointestinal endoscopy and covering a wide range of topics including capsule endoscopy, colonoscopy, double-balloon enteroscopy, duodenoscopy, endoscopic retrograde cholangiopancreatography, endosonography, esophagoscopy, gastrointestinal endoscopy, gastroscopy, laparoscopy, natural orifice endoscopic surgery, proctoscopy, and sigmoidoscopy.

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Small invasive colon cancer with adenoma observed by endocytoscopy: A case report

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Abstract

BACKGROUND

Endocytoscopy is a next-generation endoscopic system that facilitates real-time histopathologic endoscopic diagnosis of colorectal lesions by virtue of its 520 × maximum magnification.

CASE SUMMARY

We present the case of a 63-year-old man with sigmoid colon cancer who was regularly referred for follow-up colonoscopy after endoscopic resection of T1 rectal cancer. Colonoscopy revealed a 12 mm reddish polyp, including a depression and a flat area in the sigmoid colon. Endocytoscopic observation showed unclear gland formation and agglomeration of distorted nuclei (depression), suggesting a submucosal invasive (T1) cancer. In the flat area, slit-like smooth lumens and regular pattern of fusiform nuclei were found, suggesting an adenoma. On the basis of these endocytoscopic findings, we predicted this lesion as T1 cancer (depression) with adenoma (flat area) and performed endoscopic resection corresponding to the final histopathological diagnosis.

CONCLUSION

We could perform an optical diagnosis of T1 sigmoid cancer with adenoma by using endocytoscopy before treatment.

Key Words: Endocytoscopy; T1 colorectal cancer; Adenoma; Optical diagnosis; Case report

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Core Tip: Endocytoscopy is a next-generation endoscopic system. Endocytoscopic observation suggested that a 12 mm reddish polyp, including a depression and a flat area in the sigmoid colon was T1 cancer (depression) with adenoma (flat area). We could perform an optical diagnosis of the lesion by using endocytoscopy before treatment.

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INTRODUCTION

Integrated-type endocytoscopy (CF-H290ECI; Olympus Corp, Tokyo, Japan) is a next-generation endoscopy commercially available in Europe, the Middle East, Hong Kong, and Japan. An endocytoscope comprises a contact light microscopy system (magnification, $\times 520$; focusing depth, 35 μm) integrated into the distal tip of a colonoscope. It enables in vivo microvascular evaluation with the narrow band imaging mode and cellular visualization after staining with 0.05% crystal violet (1% methylene blue may be added if necessary)^[1-3]. In the diagnosis of colorectal lesions, endocytoscopy is particularly useful not only for differentiating neoplastic and non-neoplastic lesions but also for diagnosing the depth of invasion of colorectal cancer^[4,5]. In addition, endocytoscopy has recently been reported to be an effective modality for the differential diagnosis of low-grade colorectal adenomas^[6]. In the present case, we accurately predicted the histopathological findings of a two-component lesion by using endocytoscopy before treatment.

CASE PRESENTATION

Chief complaints

A 63-year-old man was regularly referred for follow-up colonoscopy after endoscopic resection of T1 rectal cancer.

Personal and family history

The patient consumed alcohol twice a week but denied smoking cigarettes. His family history was negative for any gastrointestinal cancer.

History of past illness

The patient was treated for T1 rectal cancer *via* endoscopic resection 4 years previously. The result of the histological diagnosis was adenocarcinoma (well to moderately differentiated), with a depth of invasion of 9000 μm (T1), negative lymphovascular invasion, budding grade 1, and negative horizontal and vertical margins. We considered the risk of lymph node metastasis (LNM), and recommended that he undergo additional surgery. However, he refused to undergo surgery and was consequently regularly referred for follow-up colonoscopy. In addition, he had high blood pressure and diabetes.

Imaging examinations

Colonoscopy revealed a 12 mm reddish polyp in the sigmoid colon (Figure 1A). We could recognize a depression on the left side and a flat area on the right side with indigo carmine staining (Figure 1B). On the left side of the lesion (depression), unclear gland formation and agglomeration of distorted nuclei strongly stained by methylene blue were visible with endocytoscopy, suggesting a submucosal invasive cancer (Figure 2A). On the right side of the lesion (flat area), slit-like smooth lumens and a regular pattern of fusiform nuclei were found, suggesting an adenoma (Figure 2B).

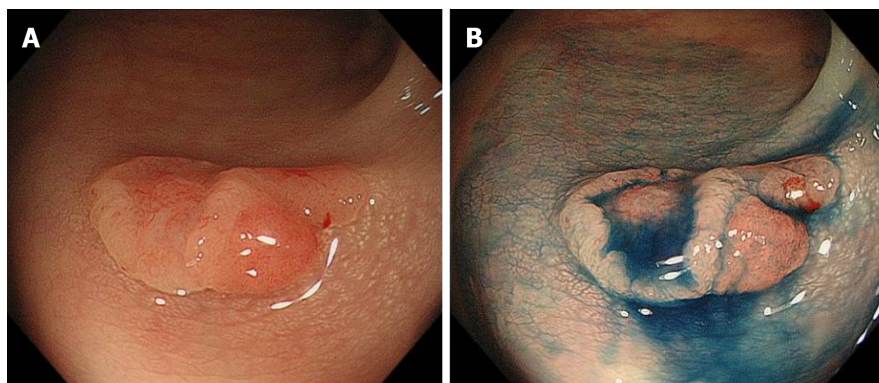


Figure 1 The colonoscopy. A: Colonoscopy revealed a 12-mm reddish polyp in the sigmoid colon; B: Indigo carmine staining revealed a depression on the left and a flat area on the right side.

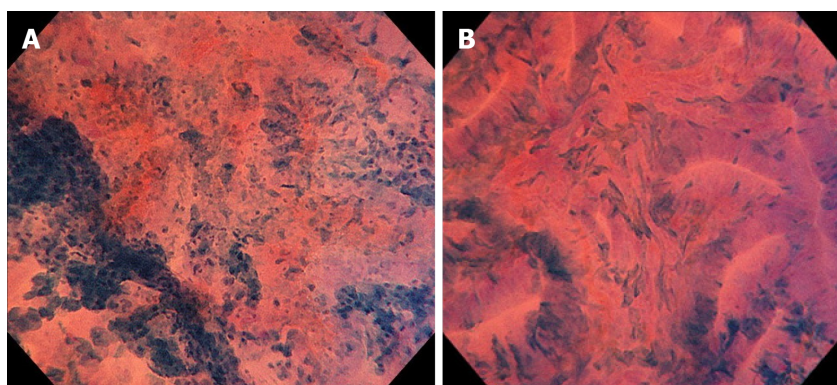


Figure 2 Endocytoscopy of the lesion. A: On the left side of the lesion (depression), unclear gland formation and agglomeration of distorted nuclei strongly stained by methylene blue were visible with endocytoscopy, suggesting a submucosal invasive cancer; B: On the right side of the lesion (flat area), slit-like smooth lumens and a regular pattern of fusiform nuclei were found, suggesting an adenoma.

FINAL DIAGNOSIS

T1 sigmoid colon cancer with adenoma. The left side of the lesion corresponded to T1 cancer and the right side corresponded to adenoma (Figure 3).

TREATMENT

Although we predicted this lesion to show massive submucosal invasion based on the optical diagnosis using endocytoscopy, we performed endoscopic mucosal resection as the first-line treatment. We decided to determine the need for additional surgery on the basis of the final histopathological diagnosis of the resected specimens.

OUTCOME AND FOLLOW-UP

Histopathological findings revealed tubular adenocarcinoma (depression) with adenoma (flat area), which was consistent with the results of the endocytoscopic diagnosis. Non-neoplastic glands were observed between the left and right sides. This lesion may have two different origins, that is, the depression and flat areas may correspond to submucosal invasive (T1) cancer and adenoma, respectively. The final histological diagnosis was as follows: Adenocarcinoma (well to moderately differentiated tubular adenocarcinoma) with adenoma, with a depth of invasion of 2407 μm (T1), negative for lymphovascular invasion, budding grade 1, and negative horizontal and vertical margins. He did not wish to undergo additional surgery. In conformity with the Japanese guidelines for the treatment of colorectal cancer, he was followed up using CT, colonoscopy and tumor marker^[7]. There has not been any

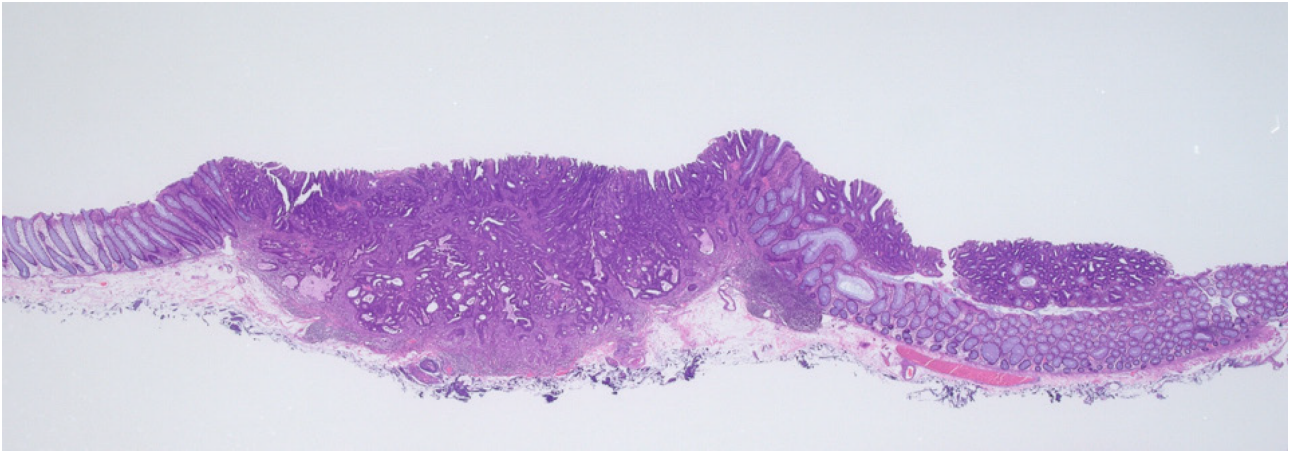


Figure 3 Final histological diagnosis: Adenocarcinoma (well to moderately differentiated tubular adenocarcinoma) with adenoma, with 2407 μ m depth of invasion (T1); negative for lymphovascular invasion, grade 1 budding, and negative horizontal and vertical margins.

evidence of recurrence to date.

DISCUSSION

Several studies have reported the effectiveness of optical diagnosis with endocytoscopy for determining the treatment course of colorectal lesions. Kudo *et al*^[8] reported that endocytoscopy provided additional diagnostic value to conventional pit pattern classification for colorectal neoplasms. The diagnostic ability of endocytoscopy to predict neoplastic changes was excellent [sensitivity: 97.4%, 95% confidence interval (CI): 95.4%-98.6%, specificity: 89.7%, 95%CI: 78.8%-96.1%, accuracy: 96.5%, 95%CI: 94.5%-97.9%]. In addition, its ability to differentiate massively invasive submucosal colorectal cancer was also good, showing 83.1% (95%CI: 73.7%-90.2%) of sensitivity, 99.1% (95%CI: 97.6%-99.7%) and 96.3% (95%CI: 94.3%-97.8%). Thus, endocytoscopy enables the optical diagnosis of colorectal lesions with high confidence levels. In the present case, we could predict the differences in histopathology between T1 cancer and adenoma within the same lesion by using endocytoscopy in real time.

The histopathological diagnosis of this lesion was T1 sigmoid cancer with adenoma. T1 colorectal cancer accounts for approximately 10% of all LNM; hence, such lesions require additional surgery with lymph node dissection after endoscopic resection for achieving complete cure^[9-12]. Although several guidelines are available for the management of T1 colorectal cancer after endoscopic resection, the criteria for additional surgery remain controversial^[7,13-16]. According to the Japanese guidelines, this patient had one risk factor, namely, a depth of invasion ≥ 1000 μ m, and hence, additional surgery was recommended. However, some studies reported that the depth of invasion was not a risk factor for LNM in T1 colorectal cancer^[12,17,18]. Moreover, the incidence of LNM is extremely low – 1.3% (95%CI: 0%-2.4%) – in the cases with submucosal invasion depth of 1000 μ m or more without associated risk factors (other than the depth of invasion) as per Japanese guidelines^[7]. The risk was very low since this patient had no evidence of lymphovascular invasion, reported to have most predictive value^[9], differentiation, and tumor budding. However if the lesion recurs, it can be life-threatening; therefore, a decision on additional treatment should be carefully made. This patient refused to undergo surgery 4 years previously despite receiving a clear explanation about the risk of LNM and the merits and demerits of additional surgery. Our findings suggest the need for developing a more accurate risk stratification for LNM in the future.

CONCLUSION

Endocytoscopy is an effective modality for the optical diagnosis of colorectal lesions. In the present case, we could diagnose the T1 cancer and adenoma components within the same lesion before treatment.

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