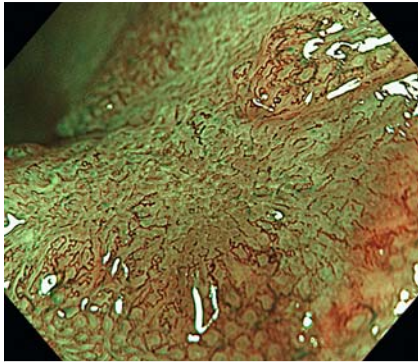
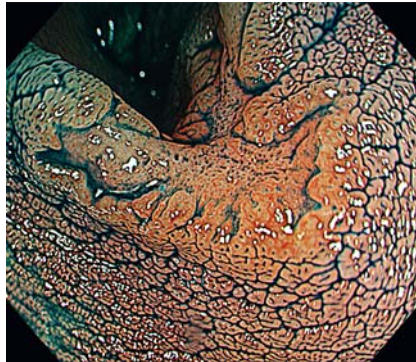


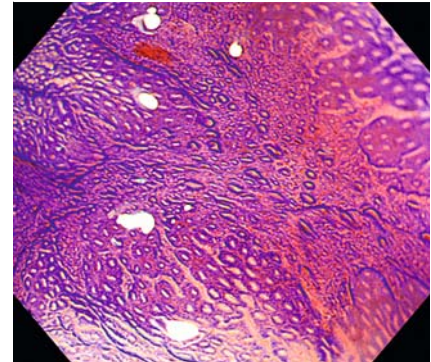
Early colorectal lesion (depressed type) detected using artificial intelligence



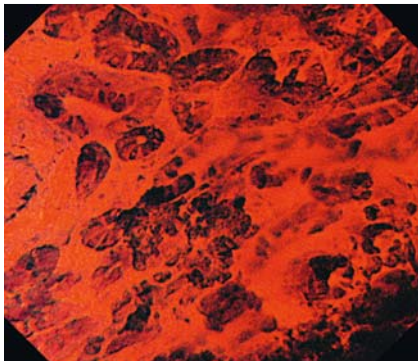
► **Fig. 1** Depressed tumor in the sigmoid colon of an 80-year-old man. Using magnifying endoscopy with narrowband imaging, slightly irregular vessel and surface patterns were observed, and the lesion was diagnosed as type 2B in the Japan NBI Expert Team (JNET) classification.



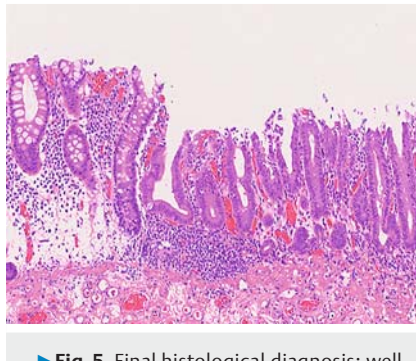
► **Fig. 2** After administration of indigo carmine dye, the demarcation of the lesion became clearer and the lesion showed a well-defined depressed area.



► **Fig. 3** Magnifying endoscopy with crystal violet staining showed a type VI pit at the margin of the lesion. In the depressed area, the pit pattern was diagnosed as type VI (noninvasive pattern), showing a mixture of IIIs and IIIc. With disordered arrangement, and intraepithelial carcinoma was suspected.



► **Fig. 4** Endocytoscopy showed disordered arrangement of the stained nuclei (EC3A by EC classification) [5].



► **Fig. 5** Final histological diagnosis: well-differentiated tubular adenocarcinoma, pTis, negative for lymphovascular invasion, with negative horizontal and vertical margins.

De novo colorectal cancer is a rare nonpolypoid cancer in which the tumor invades the submucosal layer [1]. Unlike with the elevated type, early-stage detection is difficult, and, even if it is detected, the cancer is already advanced due to the rapid speed of invasion.

Recently, artificial intelligence (AI) has been used in clinical practice for tumor detection to improve the adenoma detection rate in superficial depressed tumors [2,3]. We present the case of an 80-year-old man with a depressed tumor in the sigmoid colon.

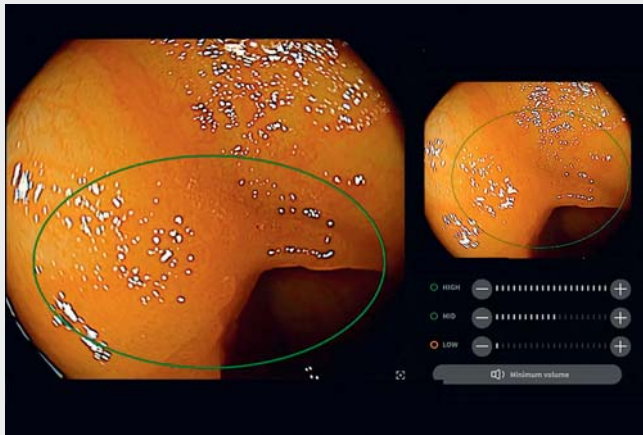
Colonoscopy revealed a reddish depressed lesion in the sigmoid colon measuring 10 mm; on magnification with narrowband imaging it was diagnosed as type 2B in the Japan NBI Expert Team (JNET) classification (► **Fig. 1**) [4]. After administration of indigo carmine dye, the lesion showed a well-defined depressed area (► **Fig. 2**). Magnifying endoscopy with crystal violet staining revealed a type VI (noninvasive pattern) pit showing a mixture of IIIs and IIIc with disordered arrangement (► **Fig. 3**). Further, endocytoscopy showed disordered arrangement

of the stained nuclei (EC3A in the EC classification) (► **Fig. 4**) [5]. The endoscopic diagnosis was intramucosal carcinoma (“high-grade dysplasia” in the West), and therefore endoscopic resection was performed. The histological diagnosis was intramucosal carcinoma with curative resection (► **Fig. 5**). In this case, Wise-Vision (NEC Corporation, Tokyo, Japan) was used for the diagnosis, and the 0-IIc morphology was reliably detected using white-light and narrowband imaging (► **Video 1**).

It is still rare to encounter a pure 0-IIc cancer in Japan. Most of the detected lesions are so-called 0-IIa depression with adenomatous histology, and de novo cancers are usually detected at the more advanced stage of submucosal deep invasive cancer with a 0-IIa + IIc morphology, which is an indication for surgery [1].

AI developed using data from flat and depressed types of cancer will be used worldwide to appropriately detect 0-IIc cancer at an early stage and treat it endoscopically, resulting in fewer patient deaths from colorectal cancer.

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Video 1 A case of a depressed type of early colorectal lesion detected using an AI system (Wise-Vision).

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Competing interests

The authors declare that they have no conflict of interest.

The authors

Naoya Toyoshima¹, Yutaka Saito¹, Masayoshi Yamada¹, Hiroyuki Takamaru¹, Shigeki Sekine², Kengo Kasuga^{1,3}, Shin-ei Kudo⁴

- 1 Endoscopy Division, National Cancer Center Hospital, Tokyo, Japan
- 2 Division of Molecular Pathology, National Cancer Center Research Institute, Tokyo, Japan

- 3 Department of Gastroenterology and Hepatology, Gunma University Graduate School of Medicine, Maebashi, Gunma, Japan
- 4 Digestive Disease Center, Showa University Northern Yokohama Hospital, Kanagawa, Japan

Corresponding author

Yutaka Saito, MD
Endoscopy Division, National Cancer Center Hospital, 5-1-1 Tsukiji, Chuo-ku, Tokyo 104-0045, Japan
ytsaito@ncc.go.jp

References

- [1] Kudo S, Tamura S, Hirota S et al. The problem of de novo colorectal carcinoma. *Eur J Cancer* 1995; 31a: 1118–1120. doi:10.1016/0959-8049(95)00251-d
- [2] Yamada M, Saito Y, Imaoka H et al. Development of a real-time endoscopic image diagnosis support system using deep learning technology in colonoscopy. *Sci Rep* 2019; 9: 14465. doi:10.1038/s41598-019-50567-5

- [3] Misawa M, Kudo SE, Mori Y et al. Artificial intelligence-assisted polyp detection for colonoscopy: initial experience. *Gastroenterology* 2018; 154: 2027–2029.e2023. doi:10.1053/j.gastro.2018.04.003
- [4] Sano Y, Tanaka S, Kudo SE et al. Narrow-band imaging (NBI) magnifying endoscopic classification of colorectal tumors proposed by the Japan NBI Expert Team. *Dig Endosc* 2016; 28: 526–533. doi:10.1111/den.12644
- [5] Kudo SE, Wakamura K, Ikehara N et al. Diagnosis of colorectal lesions with a novel endocytoscopic classification – a pilot study. *Endoscopy* 2011; 43: 869–875. doi:10.1055/s-0030-1256663

Bibliography

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