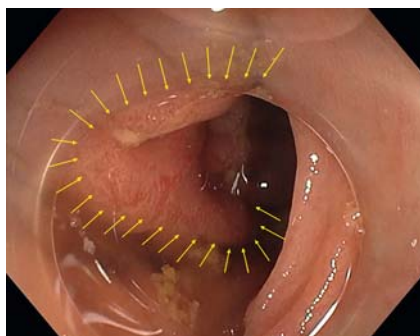


Flat colorectal adenocarcinoma: a worrisome false negative of artificial intelligence-assisted colonoscopy



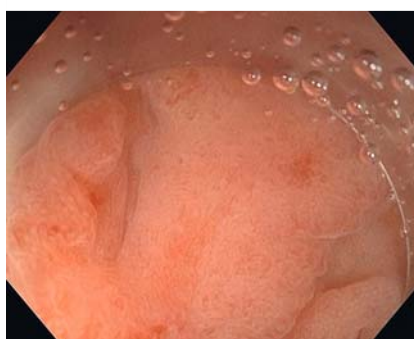
► **Fig. 1** White light view of the laterally spreading tumor with no detection by computer-aided detection (yellow arrows show the real boundaries of the lesion).



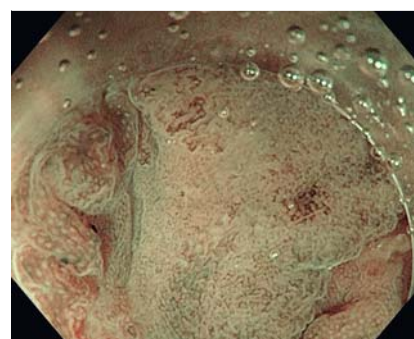
► **Video 1** Endoscopic diagnosis of the non-granular laterally spreading tumor (red arrow) not correctly detected by the computer-aided detection system.

The development of artificial intelligence (AI) systems in the field of colorectal endoscopy is currently booming, colorectal cancer being, by its frequency and severity, a serious public health concern. In terms of image analysis, AI is indeed able to perform many tasks automatically, including lesion detection, classification, and segmentation, and to combine them [1]. Lesion detection is thus the starting point of the whole chain to eventually choose the most appropriate patient treatment. Large-scale studies have demonstrated the superiority of AI-assisted detection over the usual detection by gastroenterologists, mainly for the detection of sub-centimeter polyps [2,3].

However, we have shown that a recent computer-aided detection (CADe) system such as the ENDO-AID software in combination with the EVIS X1 video column (Olympus, Tokyo, Japan) may have difficulties in the detection of flat lesions such as sessile serrated lesions (SSLs) and non-granular laterally spreading tumors [4,5]. This represents a major challenge, because in addition to their shape being difficult for the human eye to identify in practice and where AI assistance would thus be of great value, these rare lesions are associated with advanced histology.



► **Fig. 2** Corresponding white light view of the lesion (focus).



► **Fig. 3** Corresponding narrow-band imaging view of the lesion (focus).

Herein we report the case of a patient with a 2.5-cm pseudo-depressed non-granular laterally spreading tumor of the transverse colon not detected correctly by CADe (► **Fig. 1**, ► **Video 1**). This lesion included a 15-mm Kudo Vi demarcated area (► **Fig. 2**, ► **Fig. 3**). Pathological examination suggested an adenocarcinoma invading the muscularis mucosae (► **Fig. 4**, ► **Fig. 5**).

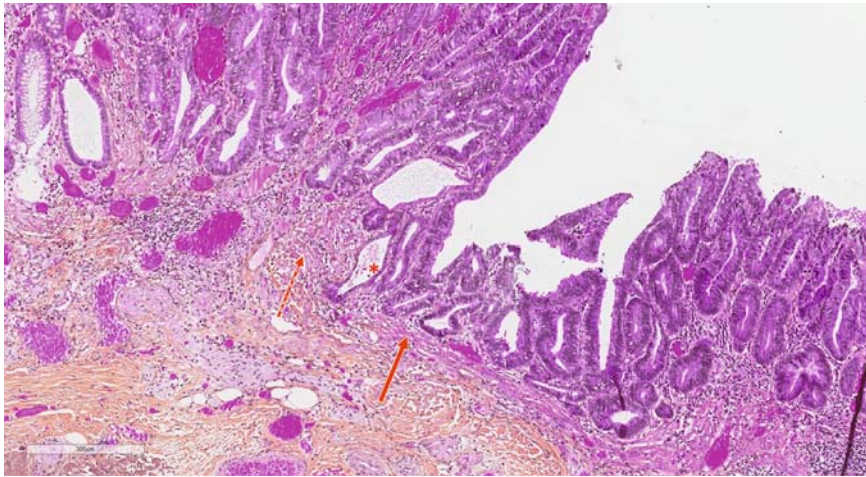
It is essential for endoscopists to continue to properly analyze the colonic mucosal surface. It remains a major challenge

for diagnostic endoscopy not to miss such flat lesions, which may be invasive cancers and for which endoscopic treatment could allow the patient to be cured.

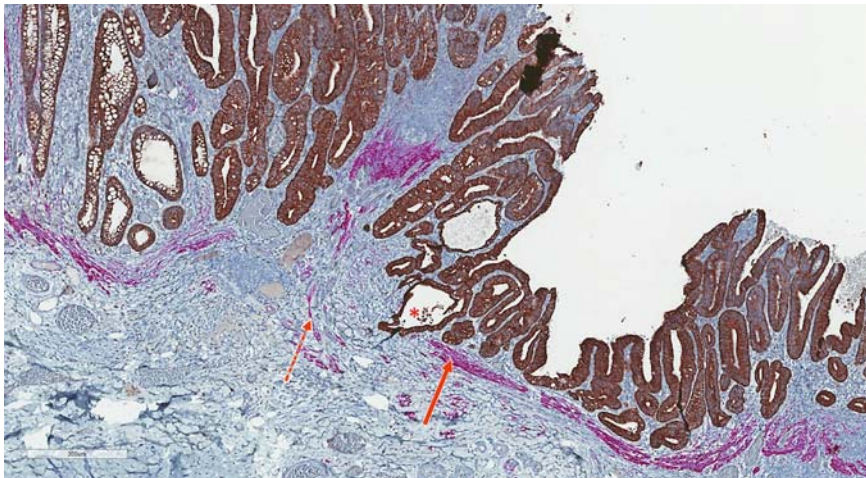
Endoscopy_UCTN_Code_CPL_1AJ_2AB

Competing interests

The authors declare that they have no conflict of interest.



► **Fig. 4** Microscopic examination of the resection specimen (hematoxylin eosin saffron staining, ×70 magnification). Red asterisk shows adenocarcinomatous gland; solid-line red arrow shows intact muscularis mucosae; dotted-line red arrow shows fragmented muscularis mucosae.



► **Fig. 5** Same examination with immunohistochemistry staining, ×70 magnification.

References

- [1] Ebigbo A, Palm C, Probst A et al. A technical review of artificial intelligence as applied to gastrointestinal endoscopy: clarifying the terminology. *Endosc Int Open* 2019; 7: E1616–E1623. doi:10.1055/a-1010-5705
- [2] Repici A, Badalamenti M, Maselli R et al. Efficacy of real-time computer-aided detection of colorectal neoplasia in a randomized trial. *Gastroenterology* 2020; 159: 512–520. e7. doi:10.1053/j.gastro.2020.04.062
- [3] Wang P, Liu P, Glissen Brown JR et al. Lower adenoma miss rate of computer-aided detection-assisted colonoscopy vs routine white-light colonoscopy in a prospective tandem study. *Gastroenterology* 2020; 159: 1252–1261.e5. doi:10.1053/j.gastro.2020.06.023
- [4] Lafeuille P, Lambin T, Yzet C et al. Flat colorectal sessile serrated polyp: an example of what artificial intelligence does not easily detect. *Endoscopy* 2021. doi:10.1055/a-1486-6220
- [5] Lafeuille P, Rivory J, Lambin T et al. Non-granular laterally spreading tumors: potential superficial cancers that artificial intelligence does not easily detect. *Endoscopy* 2021. doi:10.1055/a-1640-8624

Bibliography

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