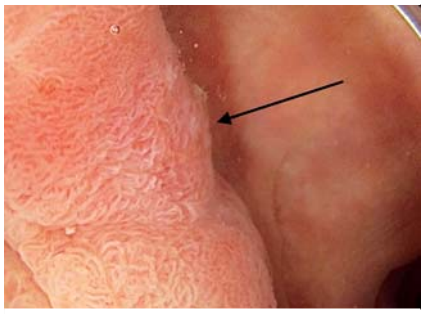
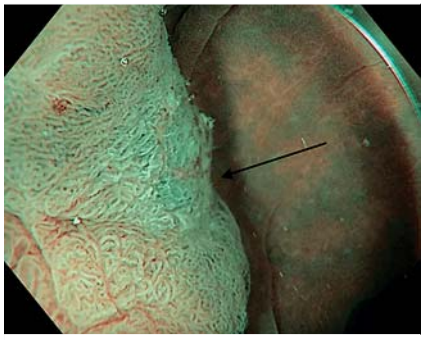
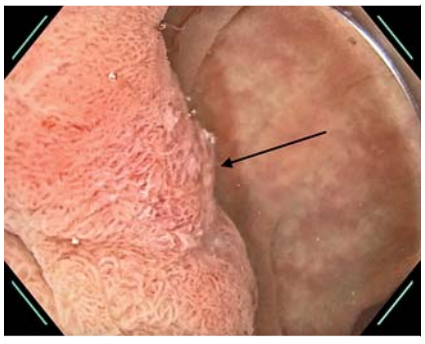
Green-colored areas in laterally spreading tumors on narrow-band imaging: a future target for artificial-intelligence-assisted detection of malignancies?



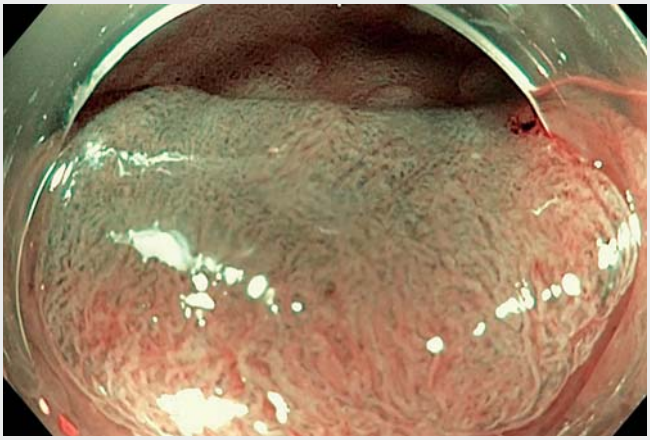
▶ **Fig. 1** White-light view of the first granular laterally spreading tumor in the sigmoid (an arrow indicates the suspect area).



▶ **Fig. 2** Narrow-band imaging view of the lesion (an arrow indicates the green-colored area corresponding to the suspect area in ▶ **Fig. 1**).



▶ **Fig. 3** Texture and color enhancement imaging view of the lesion (an arrow indicates the reddish area corresponding to the suspect area in ▶ **Fig. 1**).



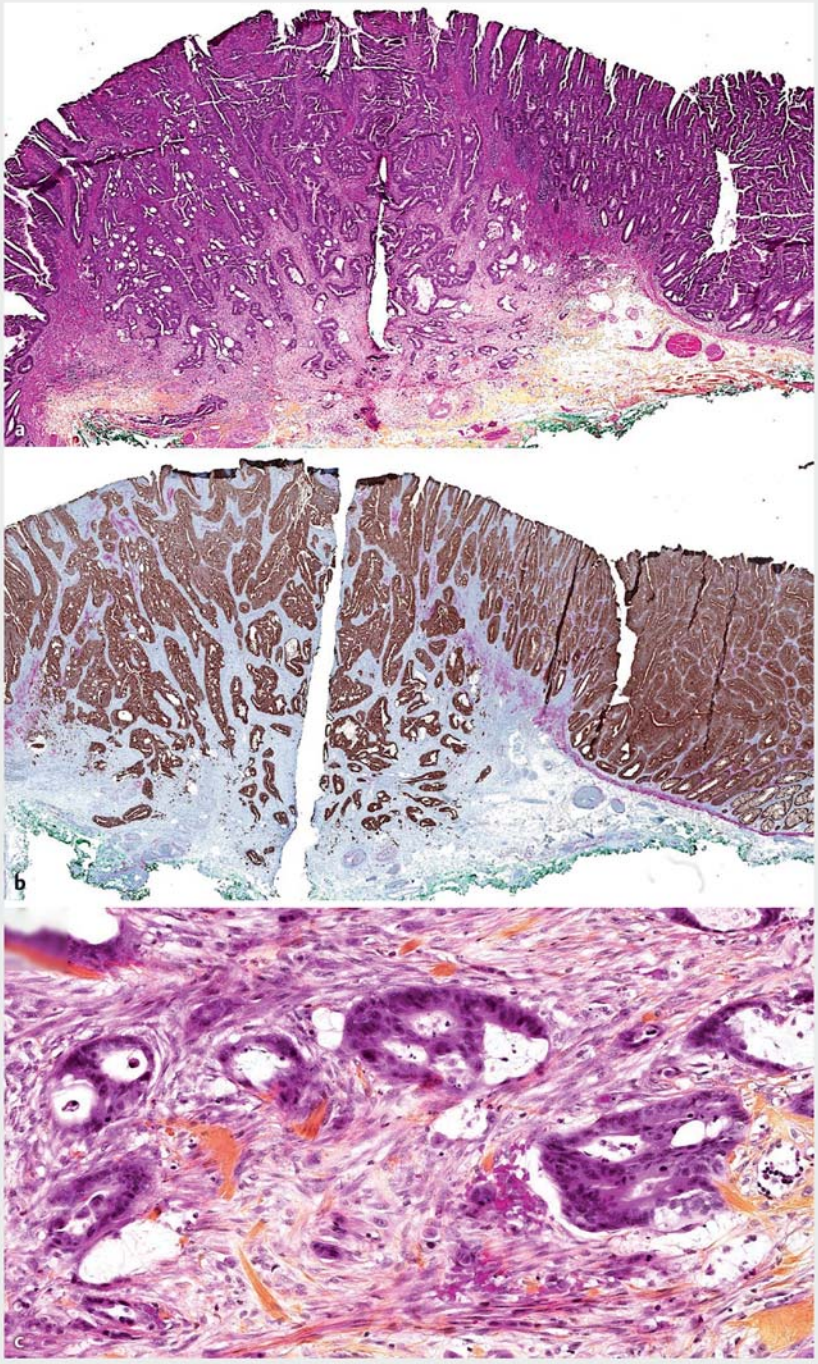
Video 1 Endoscopic examination of the four colorectal lesions with focal malignancies.

Accurate real-time characterization of colorectal lesions during endoscopy is crucial for histological prediction, allowing the choice of the most appropriate treatment [1]. Polyps are characterized on the basis of an evaluation of their macroscopic appearance, vascular pattern, and pit pattern with magnification, under both white-light and virtual chromoendoscopy such as narrow-band imaging (NBI) [2]. However, colorectal lesions are not homogeneous: a malignant component can sometimes occupy only a small area of the whole lesion and be relatively difficult to detect, especially for inexperienced endoscopists.

We report on four colorectal lesions with focal malignancies (▶ **Video 1**). The first lesion was a 4-cm granular laterally spreading tumor (LST-G) in the sigmoid with a 5-mm area classified as Kudo Vn, Sano IIIa. The second lesion was a 3-cm pseudo-depressed nongranular LST in the sigmoid with a 5-mm area classified as Kudo Vn. The third lesion was a pseudo-depressed polyp in the right colon with a central area classified as Kudo Vi. The fourth lesion was a LST-G of the cecum with a 15-mm nodule classified as Kudo Vi, Sano IIIa. The four lesions were resected by endoscopic submucosal dissection and the suspect areas were identified as adenocarcinoma invading the submucosa to depths of, respectively, 3500 µm, 900 µm, and more than 1500 µm. In all four lesions, we detected with NBI a green-colored area (also visualized as a reddish area in TXI mode; Olympus, Tokyo, Japan) that corresponded to the area where invasive cancer was found (▶ **Fig. 1**, ▶ **Fig. 2**, ▶ **Fig. 3**, ▶ **Fig. 4**).

These cases show that the malignant component within a large colorectal lesion can have a green-colored area that is easily detectable on a distant view of the lesion, without the need to analyze the entire surface under magnification. Targeting such areas before analyzing them more closely could be a way to improve prediction for inexperienced endoscopists, and the green coloration could be a red flag in artificial-intelligence-assisted support for endoscopists in detecting malignancies.

Endoscopy_UCTN_Code_TTT_1AQ_2AB



▶ **Fig. 4** Microscopic examination of the resection specimen containing invasive cancer. **a** At low power, the colic mucosa is seen to be completely destroyed (×2). **b** Invasive cancer cells, emphasized by cytokeratin AE1/AE3 staining, are spread throughout the submucosa (in brown). The invasion into the submucosa is associated with disappearance of the muscularis mucosae, which expresses desmin (in red) (×2). **c** At higher magnification, cancer cells form polyadenoid or cribriform formations and present moderate nuclear atypia with increased mitosis (×20).

Competing interests

The authors declare that they have no conflict of interest.

The authors

Pierre Lafeuille[1], Tanguy Fenouil[2], Adrien Bartoli[3], Clara Yzet[4], Thomas Lambin[1], Jérôme Rivory[1], Mathieu Pioche[1]

1 Department of Endoscopy and Hepatogastroenterology, Pavillon L, Edouard Herriot Hospital, Lyon, France
2 Institute of Pathology Est, Hospices Civils de Lyon, Lyon, France
3 EnCoV, Institut Pascal, UMR 6602, CNRS/UCA/SIGMA, EnCoV, Clermont-Ferrand, France
4 Department of Endoscopy and Hepatogastroenterology, Amiens University Hospital, Amiens, France

Corresponding author

Mathieu Pioche, MD, PhD
Endoscopy Unit, Digestive Disease Department, Pavillon L, Edouard Herriot Hospital, 69437 Lyon Cédex, France
mathieu.pioche@chu-lyon.fr

References

[1] Fabritius M, Gonzalez J-M, Becq A et al. A simplified table using validated diagnostic criteria is effective to improve characterization of colorectal polyps: the CONECCT teaching program. Endosc Int Open 2019; 07: E1197–E1206. doi:10.1055/a-0962-9737

[2] Sano Y, Tanaka S, Kudo S et al. Narrow-band imaging (NBI) magnifying endoscopic classification of colorectal tumors proposed by the Japan NBI Expert Team: Japan NBI Expert Team classification. Digest Endosc 2016; 28: 526–533. doi:10.1111/den.12644

Bibliography

Endoscopy 2022; 54: E215–E216
DOI 10.1055/a-1488-6297
ISSN 0013-726X
published online 12.5.2021

Georg Thieme Verlag KG, Rüdigerstraße 14, 70469 Stuttgart, Germany