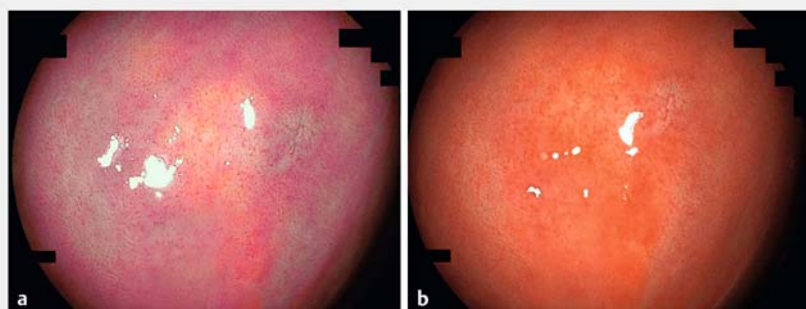


Linked color imaging aids in identification of multiple rectal neuroendocrine tumors



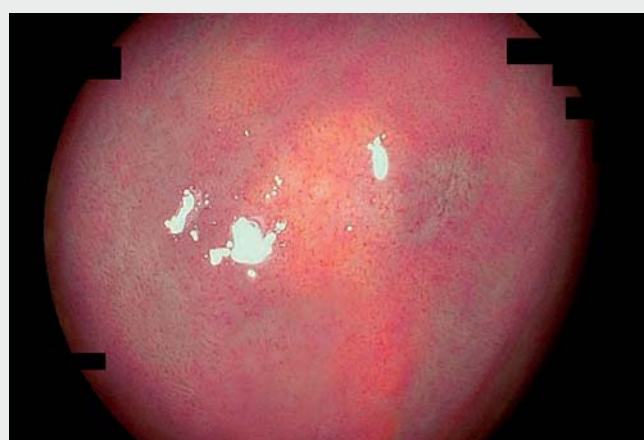
► **Fig. 1** Assessment of the rectal mucosa was challenging with standard white-light endoscopy due to the scars from previous endoscopic resections.



► **Fig. 2** Endoscopic images of the new lesion. **a** Linked color imaging revealed a yellowish lesion. **b** The lesion was not well seen with white-light endoscopy.

A 63-year-old man with a history of three synchronous primary cancers (colon, lung, and thyroid) underwent surveillance colonoscopy after his curative left hemicolectomy. A new 8 mm rectal lesion was identified and removed with hot snare polypectomy. Histology showed a grade 1 rectal neuroendocrine tumor (NET). Repeat colonoscopy 6 months later showed five new sub-centimeter rectal NETs, which were removed with cap-assisted endoscopic mucosal resection (EMR).

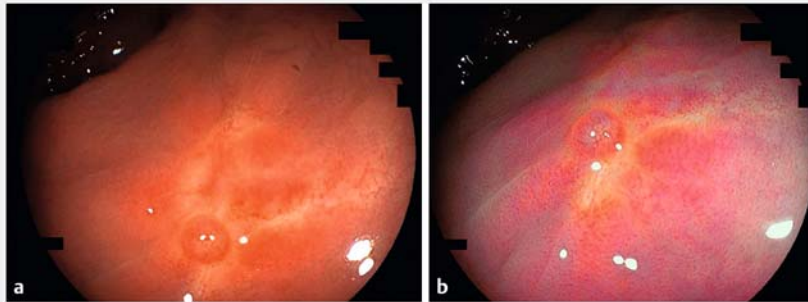
Another surveillance colonoscopy (EC-760ZP-V/L with 7000 System; Fujifilm, Tokyo, Japan) was arranged 6 months later. Assessment with standard white-light endoscopy was now challenging due to the scars from previous endoscopic resections (► **Fig. 1**). Use of linked color imaging (LCI) identified a new small (3 mm) lesion with yellowish discoloration that was not discernible on white-light endoscopy (► **Fig. 2**, ► **Video 1**). The lesion was removed using cap-assisted EMR, and post-resection histology confirmed a well-differentiated NET. There were also several small nodules found at previous resection sites, but it was difficult to ascertain with standard white-light endoscopy whether these were due to granulation scar tissue or NET recurrence (► **Fig. 3a**). LCI demon-



► **Video 1** Linked color imaging aids in identification of recurrent rectal neuroendocrine tumors.

strated that the nodules were purple even on magnified zoom (► **Fig. 3b**). This was suggestive of normal mucosa, and biopsies confirmed benign scar tissue. Rectal NETs are typically characterized as yellowish subepithelial lesions. Unfortunately, their appearance can sometimes resemble that of hyperplastic or adenomatous polyps, making endoscopic identification problematic [1]. LCI enhances the color contrast and has been shown to improve the diagnostic accuracy when

detecting colorectal polyps [2]. This case describes a patient with multiple small rectal NETs that were difficult to identify with traditional white-light and image-enhanced endoscopic modes. LCI has the unique ability to better identify rectal NETs by intensifying the color difference between normal and abnormal mucosa. Endoscopists should consider the use of LCI when there is a high suspicion for NETs.



► **Fig. 3** Endoscopic images of small nodules found at the previous resection sites. **a** White-light endoscopy. **b** Linked color imaging.

Bibliography

Endoscopy 2023; 55: E741–E742

DOI 10.1055/a-2081-9749

ISSN 0013-726X

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Endoscopy_UCTN_Code_CCL_1AD_2AC

Corresponding author

Chieh Sian Koo, MD

Division of Gastroenterology and
Hepatology, National University Hospital,
1E Kent Ridge Road, 119228, Singapore
chieh_sian_koo@nuhs.edu.sg

Competing interests

The authors declare that they have no conflict of interest.

The authors

Dmitrii Dolgunov¹, Ker Kan Tan¹, Bernice Tan², Calvin Jianyi Koh^{2,3}, Chieh Sian Koo²

- 1 Division of Colorectal Surgery, Department of Surgery, University Surgical Cluster, National University Health System, Singapore
- 2 Division of Gastroenterology and Hepatology, National University Hospital, Singapore
- 3 Yong Loo Lin School of Medicine, National University of Singapore, Singapore

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