Preliminary clinical experience with high-definition colonoscope illuminated by light-emitting diode

The development of gastrointestinal endoscopes has been closely related to innovations in light sources and observation devices [1]. We anticipated that the light-emitting diode (LED) might be useful for innovation of the gastrointestinal endoscope system and started the development of a test scope with white LEDs on its tip [2, 3]. The LED gastrointestinal endoscope does not need a large light source apparatus and light-guiding fiber bundle. Furthermore, the LED gastrointestinal endoscope system may be manufactured simply at low cost and is relatively independent of a power supply infrastructure.

In cooperation with Fujifilm Corporation (Tokyo, Japan) and Yamaguchi University, our group has developed a high-definition colonoscope that uses white LEDs (Fig. 1). High-definition images and image-enhanced endoscopy using flexible spectral imaging color enhancement are available. CCD, charge-coupled device

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Competing interests: None

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Fig. 1 The prototype high-definition colonoscope illuminated by light-emitting diodes (LEDs). Two packages of white LEDs are attached to the distal end of the colonoscope. The colonoscope has no need of a large light source apparatus and light-guiding fiber bundle. High-definition images and image-enhanced endoscopy using flexible spectral imaging color enhancement are available.

Fig. 2 Colonoscopic images of the high-definition light-emitting diode (LED) colonoscope. a Ordinary high-definition LED observation. The luminous intensity is sufficient and the vascular structure of the colorectal mucosa is observed clearly. b With flexible spectral imaging color enhancement (525 nm, 495 nm, 495 nm), the fine vascular structure of the colonic mucosa is clear without the use of a magnifying mechanism.
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References


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