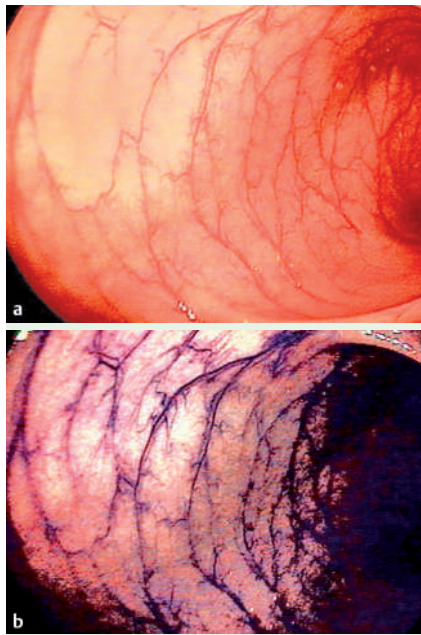
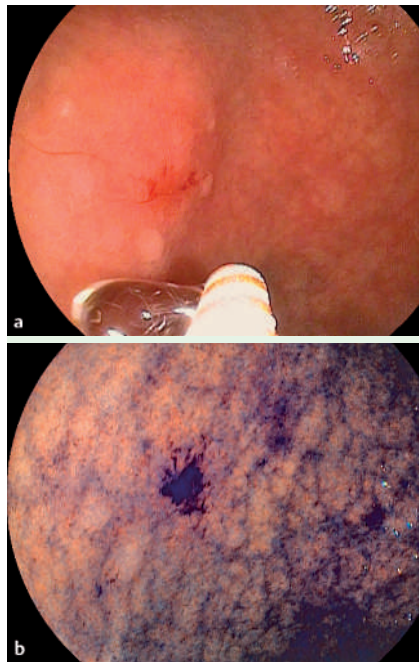


## High-contrast imaging (FICE) improves visualization of gastrointestinal vascular ectasias



**Fig. 1** **a** Blood vessels in normal colon. **b** Same area of colon with FICE™ preset 4, displaying vessels with high contrast.



**Fig. 2** **a** Active bleeding in gastric body, immediately after washing, without any underlying lesion. The tip of a gold probe catheter is visible. **b** A prominent vascular ectasia is seen at the same site with FICE preset 4.

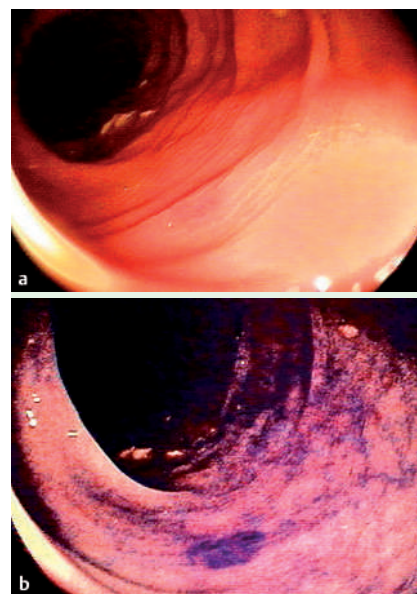
Vascular ectasia or arteriovenous malformations account for about 5%–10% of upper and nearly 30% of lower gastrointestinal bleeding, but can sometimes be difficult to detect during endoscopy [1–3]. High-contrast imaging is useful in displaying microvasculature in neoplasia [4,5]. We used the Fujinon Intelligent Color Enhancement (FICE™) system, (Fujinon, Inc. Wayne, New Jersey, USA), and noted the ease with which gastrointestinal blood vessels could be displayed at preset 4 (● Fig. 1).

A 63-year-old man with gastrointestinal bleeding underwent upper endoscopy, where active bleeding was seen to emanate from the gastric body (● Fig. 2a). On washing, no underlying lesion was seen, but with FICE (preset 4) a prominent vascular ectasia was displayed at the point of observed bleeding that was not visible on switching back to normal imaging (● Fig. 2b). A 54-year-old man with intermittent lower gastrointestinal bleeding had a few non-bleeding vascular ectasias seen in the ascending colon during colonoscopy; one prominent vascular ectasia was barely visible with white

light, but was clearly seen with FICE (● Fig. 3).

These examples illustrate the ability of FICE to enhance the appearance of normal vessels (● Fig. 1) and poorly visible or unseen vascular ectasia (● Fig. 2 and 3). With FICE, white light is used to illuminate the mucosa, but three wavelengths (at preset 4: 405 nm, 500 nm, and 520 nm) are selected from the reflected light to produce an image with high contrast, with the vessels appearing much darker than the surrounding mucosa. The visibility of vascular ectasias depends on their size, hydration, hemoglobin level, blood flow, and use of narcotic drugs [2,3]. High-contrast imaging not only improves the visibility of normal mucosal vessels, but may aid in the detection of vascular ectasias that are not easily seen.

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**Fig. 3** **a** Faint red area in the ascending colon, seen when advancing the endoscope. **b** A vascular ectasia is displayed at the same site by FICE preset 4.

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### References

- 1 Zuckerman GR, Cornette GL, Clouse RE et al. Angiodysplasia as a cause of upper gastrointestinal bleeding. *Arch Intern Med* 1985; 45: 458–461
- 2 Boley SJ, Brandt LJ. Vascular Ectasias of the colon-1986. *Dig Dis Sci* 1986; 31: S26–S45
- 3 Brandt LJ, Spinnell MK. Ability of naloxone to enhance the colonoscopic appearance of normal colon vasculature and colon vascular ectasias. *Gastrointest Endosc* 1999; 49: 79–83
- 4 Muto M, Katada C, Sano Y et al. Narrow band imaging: a new diagnostic approach to visualize angiogenesis in superficial neoplasia. *Clin Gastroenterol Hepatol* 2005; 3: S16–S20
- 5 Nakayoshi T, Tajiri K, Matsuda K et al. Magnifying endoscopy combined with narrow band imaging system for early gastric cancer: correlation of vascular pattern with histopathology. *Endoscopy* 2004; 36: 1080–1084

### Bibliography

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