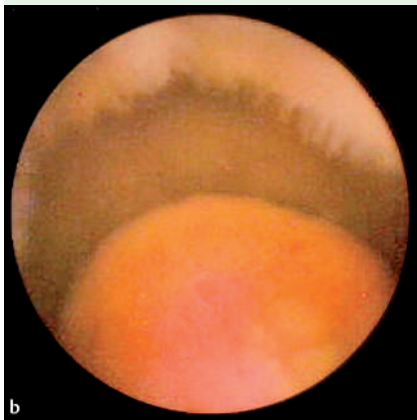
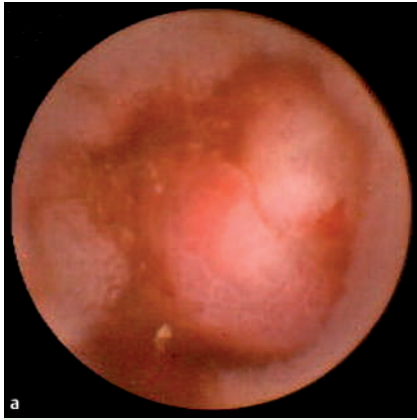
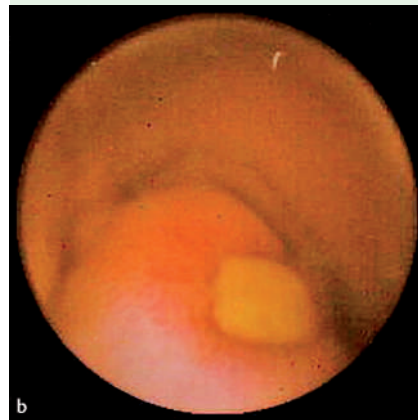


## Multifocal small-bowel carcinoid tumor causing obscure recurrent gastrointestinal bleeding diagnosed by capsule endoscopy



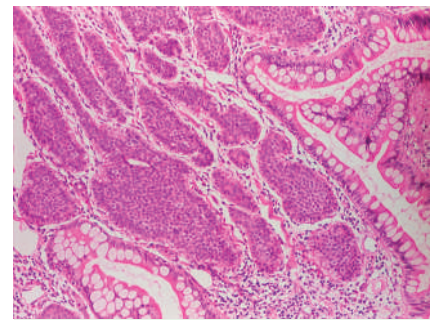
**Fig. 1** Small-bowel video capsule endoscopic views. The first study revealed multiple masses in the distal ileum, some of them showing stigmata of recent bleeding (see also Videos 1,2).



**Fig. 2** Repeat capsule endoscopy views. The second study revealed similar findings to those of the first study – multiple submucosal tumors, some of which were umbilicated and ulcerated (see also Videos 3,4).

A 38-year-old woman presented to our hospital with a 2-day history of passing black tarry stools. She had a history of recurrent obscure gastrointestinal bleeding, manifested by hematochezia and iron-deficiency anemia for 2 years, and had had six negative upper endoscopies and six negative colonoscopies prior to this presentation. A small-bowel series and computed tomography of the abdomen were both negative. Because conventional studies failed to find a source of bleeding and because the bleeding persisted, the patient was referred for a small-bowel video capsule endoscopy (Given Imaging Ltd., Yoqneam, Israel). The study was limited due to prolonged retention of the capsule in the stomach but nevertheless

it revealed multiple submucosal masses in the distal ileum, some of which were umbilicated and ulcerated, with stigmata of recent bleeding (▶ **Fig. 1, Videos 1,2**). A second capsule endoscopy was performed, preceded by intravenous administration of 10 mg of metoclopramide. This revealed similar findings to those of the first study, but the whole terminal ileum was visualized this time (▶ **Fig. 2, Videos 3,4**). In view of the capsule endoscopy findings, the patient underwent exploratory laparotomy, which identified three tumors measuring between 0.8 cm and 2.1 cm, located approximately 2 feet from the ileocecal valve. Histopathological examination revealed classic carci-



**Fig. 3** Histopathological examination revealed the classic appearances of carcinoid tumor, with characteristic ribbons and sheets of metaplastic cells, and with only a mild degree of nuclear atypia.

noid tumors (▶ **Fig. 3**). Immunopathological studies also favored a diagnosis of carcinoid tumor. The patient was discharged home after an uneventful post-operative recovery period, and she is currently asymptomatic (59 months post-operatively) on treatment with Sandostatin LAR intramuscularly every 28 days. The most common indication for the small-bowel capsule endoscopy is to identify the source of obscure gastrointestinal bleeding [1,2], but this method is now also being successfully used to diagnose Crohn's disease, vascular abnormalities, small-bowel tumors, and celiac disease, and to investigate chronic diarrhea and abdominal pain [3]. In our patient, the tumors we identified were located within 2 feet of the ileocecal valve, which is the most frequently reported location for carcinoid tumors in the gastrointestinal tract [4]. This location is difficult to reach by conventional means. This case report illustrates the potential value of small-bowel capsule endoscopy in the early diagnosis of multifocal carcinoid tumors in the midgut.

Endoscopy\_UCTN\_Code\_CCL\_1AC\_2AC

### Videos

**Video 1** Small-bowel video capsule endoscopy revealed multiple masses in the distal ileum, some of them showing stigmata of recent bleeding.

**Video 2** A round mass in the distal ileum.

**Video 3** Repeat capsule endoscopy revealed similar findings to those of the first study – multiple submucosal tumors, some of them umbilicated and ulcerated.

**Video 4** An ulcerated tumor in the distal ileum.

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