BREAKING WAVES: UNDERWATER ENDOSCOPIC MUCOSAL RESECTION UNVEILS A NOVEL APPROACH TO TACKLING ILEAL NEUROENDOCRINE TUMORS

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BACKGROUND

- Neuroendocrine tumors (NETs) are rare neoplasms primarily found in the gastrointestinal tract, with the small bowel being the second most common site after the stomach.
- Often asymptomatic, NETs are typically discovered during routine screenings.
- While surgical resection is the standard approach for small bowel NETs, challenges may necessitate less invasive options, such as underwater endoscopic mucosal resection (UEMR).
- Although UEMR has shown success in treating colorectal polyps and NETs in the rectum and duodenum, its application for ileal NETs is limited, with only one documented case.

CASE DESCRIPTION

- A 76-year-old woman with no past medical history underwent routine colonoscopy surveillance, revealing a small submucosal lesion in the terminal ileum.
- Biopsies were consistent with a NET.
- Given the size of the lesion, the patient sought to pursue endoscopic resection.
- A colonoscopy with terminal ileal intubation was performed. The lumen was filled with saline under endoscopic visualization. An 11-mm snare and endocut mode were utilized for the resection **(Fig.1-3)**. Subsequent endoscopic examination revealed muscle fibers but no evidence of perforation or residual lesions **(Fig.4)**. Hemostatic clips were placed **(Fig.5)** and the resected specimen, a 10-mm firm rubbery oval lesion with an intact capsule, was retrieved **(Fig.6)**.
- Histopathological examination of the specimen showed a well-differentiated grade 2 (moderate) NET, involving the superficial submucosal layer. Ki-67 index was 3-5% **(Table 1)**.

Figure 1. Underwater endoscopic mucosal resection of ileal neuroendocrine tumor with a 11-mm snare.

Figure 2. Close-up view of the neuroendocrine tumor before resection.

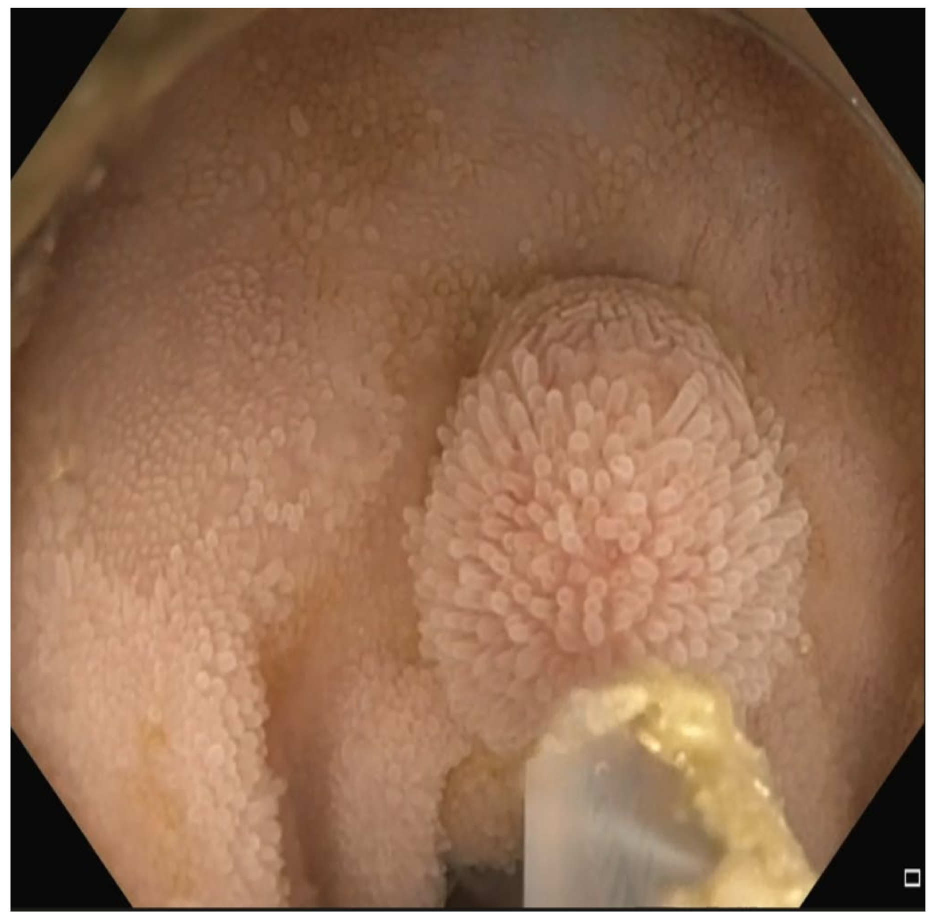

Figure 3. Close-up view of the neuroendocrine tumor before resection.

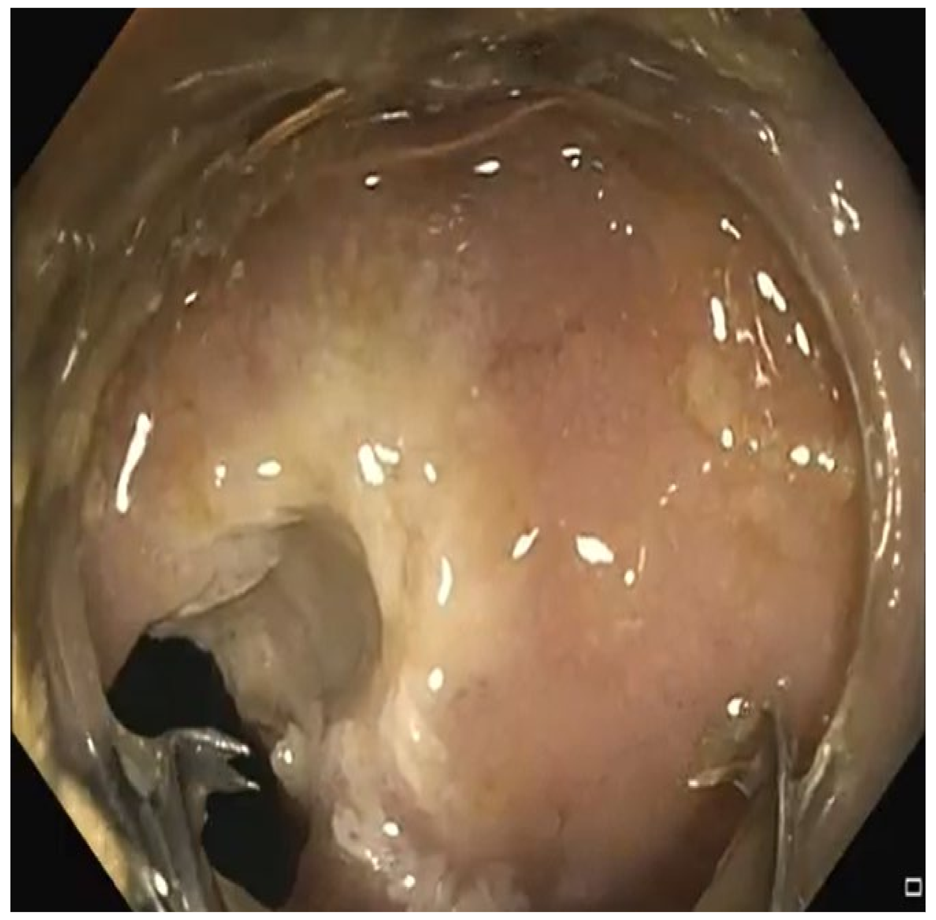

Figure 4. Endoscopic view after resection of NET.

Figure 5. Hemostatic clips in place.

Figure 6. Resected specimen retrieved.

TABLE 1. 2019 WHO CLASSIFICATION OF NEUROENDOCRINE NEOPLASMS OF THE GASTROINTESTINAL TRACT AND HEPATOPANCREATOBILIARY ORGANS

Terminology	Differentiation	Grade	Mitotic rate, mitoses/2 mm²	Ki-67 index, %
NET, G1	Well differentiated	Low	<2	<3
NET, G2	Well differentiated	Intermediate	2-20	3-20
NET, G3	Well differentiated	High	>20	>20
NEC, small cell type	Poorly differentiated	High	>20	>20
NEC, large cell type	Poorly differentiated	High	>20	>20
Mixed neuroendocrine-non-neuroendocrine neoplasm (MiNEN)	Well or poorly differentiated	Variable	Variable	Variable

NET, neuroendocrine tumor; NEC, neuroendocrine carcinoma.

DISCUSSION AND CONCLUSSION

- The terminal ileum is the primary location for small bowel NETs, generally having a poorer prognosis compared to NETs in other sites, with an overall median survival of 88 months (vs. stomach: 124 months, duodenum: 99 months, rectum: 240 months).
- Endoscopic resection techniques, including endoscopic mucosal resection (EMR), endoscopic submucosal dissection and full-thickness resection, are generally considered the preferred treatment for small bowel NETs when feasible.
- However, UEMR is a novel alternative to traditional EMR that offers a less invasive treatment option.
- Unlike conventional methods, UEMR doesn't require submucosal injection; instead, it utilizes water to lift the lesion and separate the submucosa from the muscularis propria, facilitating easier resection with a snare and decreasing the risk of perforation.
- This case demonstrates that UEMR can be a successful therapeutic strategy for the resection of low-Intermediate grade ileal NETs. Further evaluation should be performed to rule out any lymph node involvement or distant disease.