



Management of arterial bleeding after endoscopic resection of a neuroendocrine gastric tumor

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We report a case focusing on the management of arterial bleeding after endoscopic resection of a neuroendocrine gastric tumor (NET) (Video 1, available online at www.VideoGIE.org).

A 47-year-old woman was referred to our center in December 2017 to explore a weight loss of 10 kg and epigastric pain. Laboratory values showed a significantly low hemoglobin value of 6.2 g/dL, low levels of vitamin B12, and positive anti-intrinsic factor antibodies. Given that we suspected pernicious anemia, upper-GI endoscopy confirmed fundic gastritis and revealed a 25-mm sessile lesion. Examination of biopsy specimens revealed a G1 well-differentiated neuroendocrine tumor. Echoendoscopy

showed a T1 lesion. We then decided to remove this fundic NET by endoscopy.

Therapeutic endoscopy confirmed a 25-mm sessile lesion in the body of the stomach. The procedure was done with the patient under deep sedation using propofol. After the tumor had been removed with a 25-mm snare with a twisted wire (ERBE settings: Endocut Q effect 2, forced coag effect 3), bleeding from 3 different arterioles occurred.

Spurting bleeding continued from 1 particular arteriole. The bleeding did not decrease despite copious washing of the lesion. This kind of bleeding could be compared with a Forrest 1a ulcer. Hemostasis could thus be performed by use of a clip or thermal coagulation. However, recent

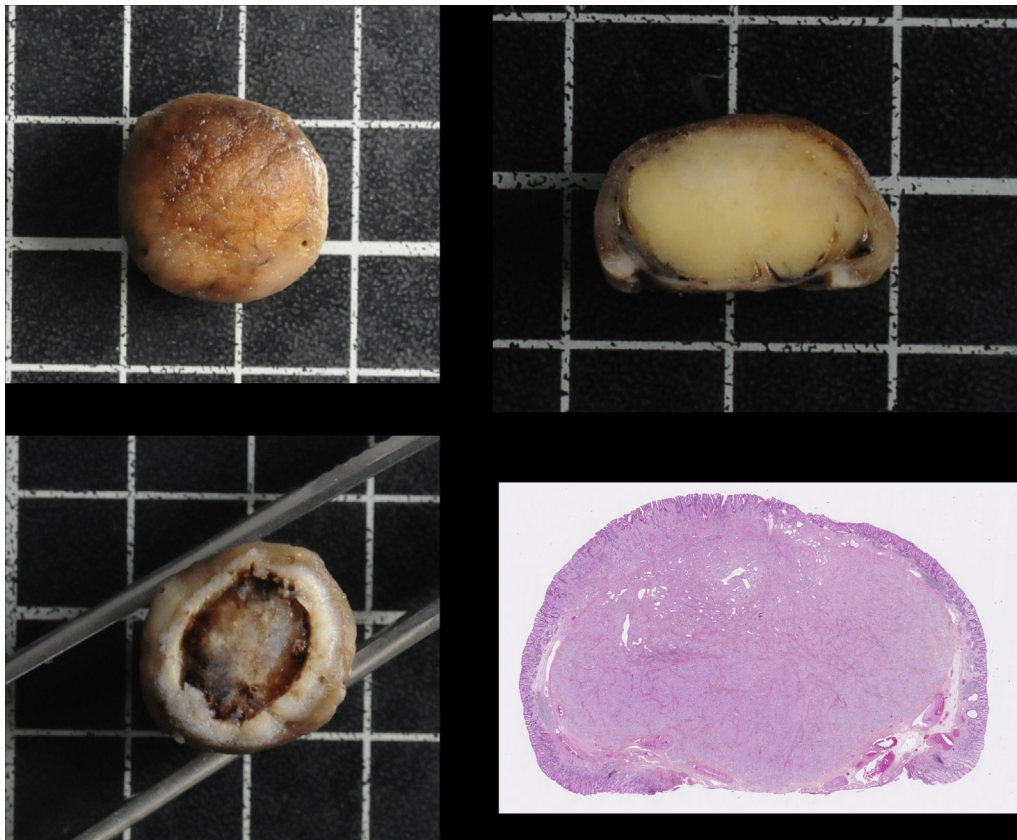


Figure 1. Macroscopic and histologic appearance of the resected lesion (H&E, orig. mag. $\times 10$).

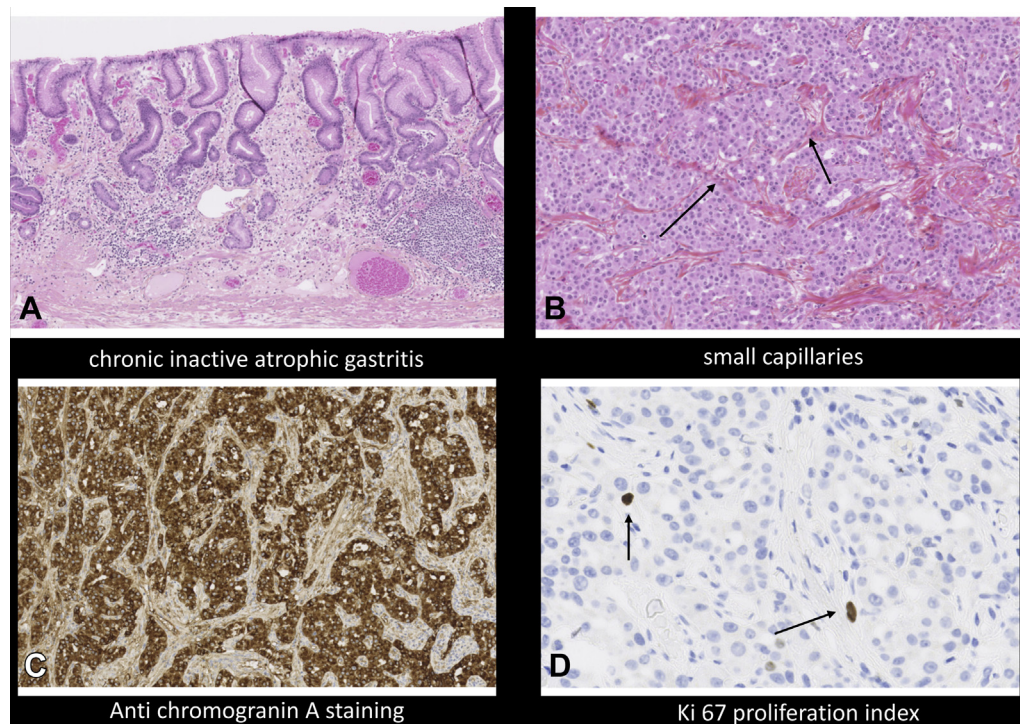


Figure 2. Pathologic and immunostaining views of the resected lesion. **A**, H&E, orig. mag. $\times 100$; **B**, H&E, orig. mag. $\times 200$; **C**, chromogranin, orig. mag. $\times 100$; **D**, Ki67, orig. mag. $\times 400$.

data suggest the superiority of thermal therapy for the treatment of bleeding ulcers.¹ We thus performed hemostasis using the Coagrasper forceps (Olympus Corporation, Tokyo, Japan), a monopolar hemostatic hot forceps (soft coagulation mode, effect 6.5; 80 W). This tool combines 2 well-described methods: coagulation and mechanical pressure.^{1,2}

The lesion was retrieved after we had ensured the bleeding had stopped. The patient was discharged the following day with a 3-month course of proton pump inhibitors and reported no adverse events at her follow-up visit.

The final pathology result (Fig. 1) confirmed complete resection of the well-differentiated stage 1 (Ki 67% = 1%) type 1 neuroendocrine tumor (18 mm \times 15 mm \times 10 mm) developed from inactive chronic atrophic gastritis (Fig. 2). NETs are composed of a proliferation of midsize cells with a round nucleus and eosinophilic cytoplasm, organized in nests, separated by a multitude of small capillaries. This feature is common among NETs and explains the bleeding after the resection of the lesion.

NETs are common among patients presenting with pernicious anemia. Their removal is possible endoscopically, providing they are small and have limited local extension. Given the rich vascularization of these tumors, hemostasis can be challenging.

This case illustrates the need for surveillance of pernicious anemia-associated atrophic gastritis. Recently published European guidelines from the European Society of Gastroin-

testinal Endoscopy³ advise a first endoscopy assessment at the time of diagnosis with high-definition chromoendoscopy and guided biopsies (of visible metaplasia) or at least 2 biopsy specimens from the antrum and 2 from the corpus, the lesser and greater curvatures. Surveillance is then recommended every 3 years in the absence of dysplasia, and every year in case of dysplasia or in case of a first-degree family history of gastric cancer.³ NET type 1 lesions <1 cm do not require further exploration nor resection, whereas ≥ 10 -mm lesions require pathologic and echoendoscopic evaluation to exclude submucosal infiltration and validate the endoscopic resection indication. After endoscopic resection, follow-up at 1 year is recommended. For tumors ≥ 1 cm, with muscularis invasion or metastatic lymph nodes or G2 pathologic results (Ki67 $>2\%$), the 2 options are subtotal gastrectomy or surgical resection of the tumor.⁴

It must be emphasized that the Coagrasper forceps is useful for hemostasis. It is perfectly suitable for both kinds of bleeding that occurred in this case: small arterial sudden spurting and also oozing bleeding. It appears to be an interesting innovation and is relatively easy to use. However, it requires a minimal level of training to allow correct usage and to avoid the related potential adverse event of perforation in case of muscular hemostatic injury.

DISCLOSURE

All authors disclosed no financial relationships relevant to this publication.

Abbreviation: NET, neuroendocrine tumor.

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<https://doi.org/10.1016/j.vgie.2019.07.009>

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