

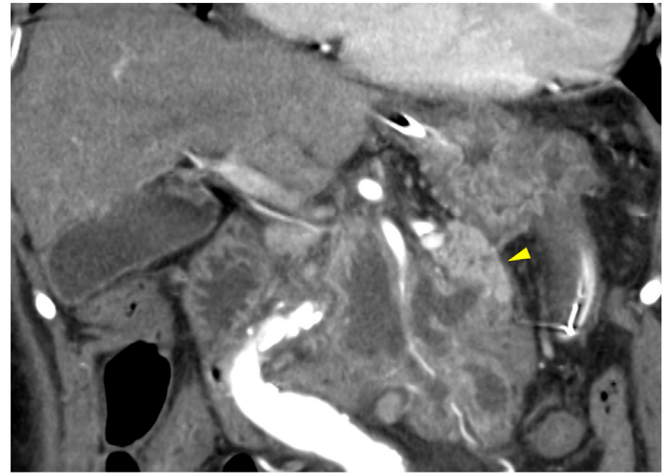


# Upside down in WONderland: EUS-guided upward insertion of a lumen-apposing metal stent via the third portion of the duodenum

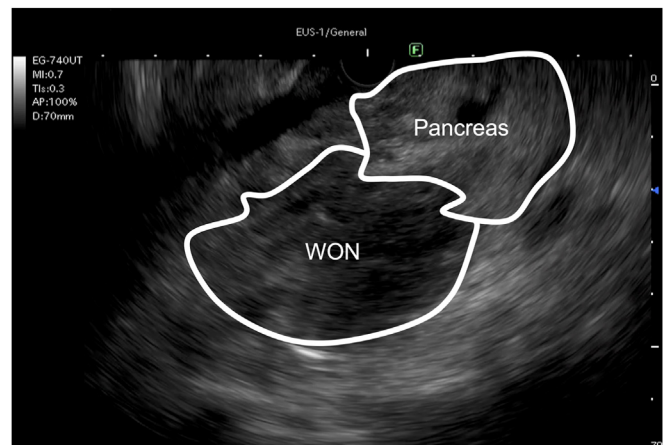
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EUS-guided transmural drainage is increasingly used to manage symptomatic walled-off necrosis (WON).<sup>1-3</sup> However, this treatment option may not be feasible for WON located in areas other than the upper GI tract.<sup>4</sup> Herein, we present a case where WON located behind the pancreas was successfully resolved via the EUS-guided upward insertion of a lumen-apposing metal stent (LAMS) from the third portion of the duodenum (Video 1, available online at [www.videogic.org](http://www.videogic.org)).

A 92-year-old woman was hospitalized for infectious WON due to severe acute pancreatitis (Fig. 1). She was symptomatic with fever, pain, and anorexia, and the lesion was partially encapsulated after about 3 to 4 weeks of onset of acute pancreatitis. The WON was not amenable to drainage from the stomach or proximal duodenum because of the intervening pancreas on EUS (Figs. 2 and 3). We eventually found the puncture route from the third portion of the duodenum (Fig. 4), where a lesion was observed in the adjacent area of the duodenal lumen despite a highly deflected position of the echoendoscope (EG-740UT; Fujifilm, Tokyo, Japan). An electrocautery-enhanced 15-mm-wide and 10-mm-long LAMS (Hot AXIOS; Boston Scientific Japan, Tokyo, Japan) was placed in an upward direction via the transduodenal route (Fig. 5).<sup>5</sup> After guidewire insertion through the LAMS, a coaxial 7F pigtail nasal catheter was additionally placed for irrigation (Figs. 6 and 7). The postprocedural course was uneventful, with no procedure-related adverse events. The irrigation was administered through the nasal cystic drain at a rate of 10 mL/h for 12 h/d for 14 days using



**Figure 1.** CT image delineating a large WON. The body to the tail of the pancreas (arrowhead) intervened between the stomach and the targeted lesion, inhibiting the EUS-guided transgastric approach. WON, walled-off necrosis.



**Figure 2.** The relative location of the WON and pancreas observed through EUS. WON was positioned behind the pancreas when observed from the stomach. WON, walled-off necrosis.

*Abbreviations:* LAMS, lumen-apposing metal stent; WON, walled-off necrosis.

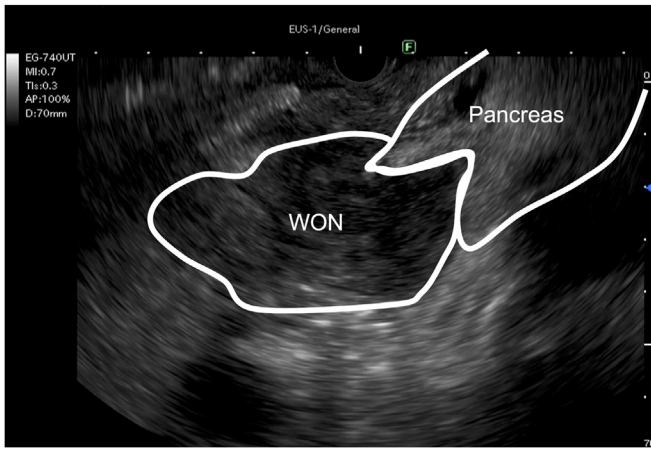
\*These authors are members of the WONDERFUL study group in Japan.

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normal saline solution. Although endoscopic necrosectomy assisted by an overtube with inflated balloon was planned in case of endoscopic necrosectomy,<sup>6</sup> the resolution of WON was confirmed on follow-up CT (Fig. 8), the LAMS and



**Figure 3.** The relative location of the WON and pancreas observed through EUS. WON was positioned behind the pancreas when observed from the proximal duodenum. WON, walled-off necrosis.



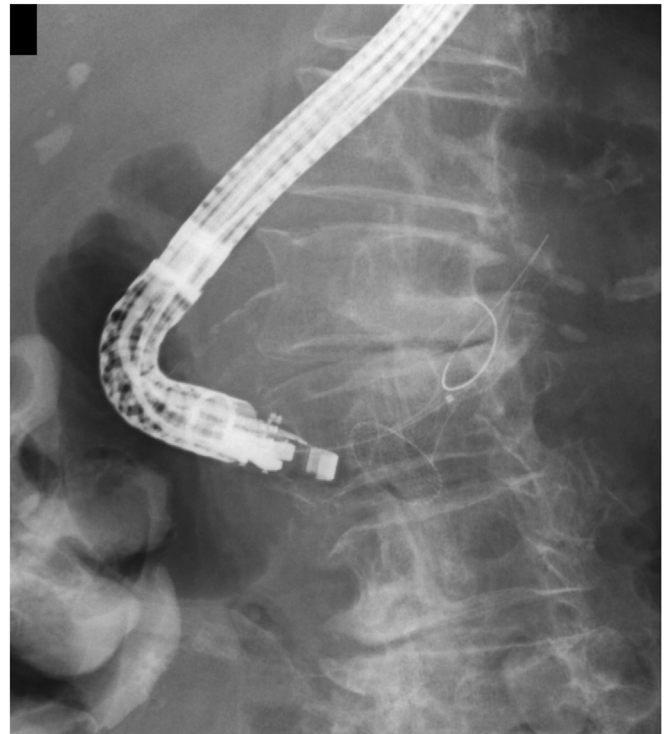
**Figure 4.** The relative location of the WON and pancreas observed through EUS. There was the safety puncture route for WON from the third portion of the duodenum. WON, walled-off necrosis.

catheter were removed endoscopically on the 19th day of the procedure, and the patient was discharged without any adverse events.

The EUS-guided approach from the third portion of the duodenum can be a treatment option for WON located in the dorsal area of the pancreas, potentially expanding the indications of EUS-guided drainage. The deflection of an echoendoscope may limit the insertion of the stiff stent delivery, and therefore, wire-guided placement or plastic stent placement may be considered. Finally, the successful treatment of this older patient of considerable age highlights the improved safety of EUS-guided WON treatment.



**Figure 5.** WON treated via EUS-guided placement of a LAMS from the third portion of the duodenum. The echoendoscope can be seen at a deflected position at the time of EUS-guided placement of a LAMS. LAMS, lumen-apposing metal stent; WON, walled-off necrosis.



**Figure 6.** WON treated via EUS-guided placement of a LAMS from the third portion of the duodenum. Guidewire insertion through a LAMS is shown, followed by the placement of a nasocystic catheter for continuous irrigation. LAMS, lumen-apposing metal stent; WON, walled-off necrosis.



**Figure 7.** CT image delineating a LAMS placed in an upward direction. The *arrowhead* indicates the third portion of the duodenum where the tip of an echoendoscope was positioned at the time of EUS-guided placement of a LAMS. LAMS, lumen-apposing metal stent.

## DISCLOSURE

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**Figure 8.** CT image demonstrating a resolution of the targeted WON. A LAMS and a co-axial nasocystic catheter were in situ. LAMS, lumen-apposing metal stent; WON, walled-off necrosis.

tion, the decision to publish, or the preparation of the manuscript.

## REFERENCES

1. Boxhoorn L, Fritzsche JA, Fockens P, et al. Clinical outcome of endoscopic treatment for symptomatic sterile walled-off necrosis. *Endoscopy* 2021;53:136-44.
2. Yasuda I, Takahashi K. Endoscopic management of walled-off pancreatic necrosis. *Dig Endosc* 2021;33:335-41.
3. Saito T, Omoto S, Takenaka M, et al. Risk factors for adverse outcomes at various phases of endoscopic ultrasound-guided treatment of pancreatic fluid collections: data from a multi-institutional consortium. *Dig Endosc* 2023;36:600-14.
4. Zhang LY, Kunda R, Aerts M, et al. Novel 15-mm-long lumen-apposing metal stent for endoscopic ultrasound-guided drainage of pancreatic fluid collections located  $\geq 10$  mm from the luminal wall. *Endoscopy* 2022;54:706-11.
5. Bang JY, Wilcox CM, Navaneethan U, et al. Treatment of walled-off necrosis using lumen-apposing metal stent versus plastic stents: a systematic review and meta-analysis of data from randomized trials. *Endoscopy* 2024;56:184-95.
6. Saito T, Hamada T, Nakai Y. Balloon ride to WONderland: balloon overtube-assisted transduodenal necrosectomy for walled-off pancreatic necrosis. *Dig Endosc* 2023;35:791.