

EUS-guided celiac plexus radiofrequency ablation using a novel device



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The incidence of pancreatic cancer in the U.S. population was estimated to be 53,670 in 2017.¹ Abdominal pain is common in patients with pancreatic cancer and can be intense, debilitating, and refractory to medical treatment.² EUS celiac plexus neurolysis (CPN) is considered efficacious in the management of pancreatic cancer pain and can be used early at the time of diagnosis of inoperable disease.³

However, EUS-CPN has significant variation in analgesic effectiveness in these patients (24%-80%).⁴⁻⁶ Recently, EUS-guided celiac plexus radiofrequency ablation (RFA) has been administered using dedicated probes in a new technique for pain management in patients with pancreatic cancer. Despite limited data on efficacy, preliminary evidence reveals acceptable tolerability and a good safety profile with likely more focused targeting of the celiac plexus.^{7,8}

The currently available dedicated device for EUS-RFA is the Habib monopolar EUS-RFA catheter (EMcision Ltd, London, UK), which is a 1F wire with a working length of 190 cm. This probe is gently inserted inside the hollow of a 19-gauge FNA needle after removal of the stylet until the needle tip is reached. The needle then is withdrawn 1 cm as the RFA catheter is advanced.

Here, we introduce a new device for EUS-guided celiac plexus RFA using the novel RFA EUS needle (Starmed; Taewoong Medical, Seoul, Korea) used in 2 patients with inoperable pancreatic cancer (Video 1, available online at www.VideoGIE.org).

According to National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology Version 3.2019, the indications for CPN in patients with pancreatic tumor include those with severe tumor-associated abdominal pain that is unresponsive to analgesics or those experiencing undesirable side effects.⁹ Relative contraindications for EUS-CPN include difficult access because of altered anatomy.^{10,11} Absolute contraindications for EUS-CPN are coagulopathy, platelets <50,000, local/intrabdominal infection and sepsis, bowel obstruction, patients on disulfiram therapy for alcohol abuse, patients with physical dependence and drug-seeking behaviors, and uncooperative patients.^{10,11}

The first case was a 45-year-old woman with newly diagnosed pancreatic neuroendocrine tumor who had a visual analog scale (VAS) score of 8 and received intravenous morphine (10 mg standing dose) twice daily. The second

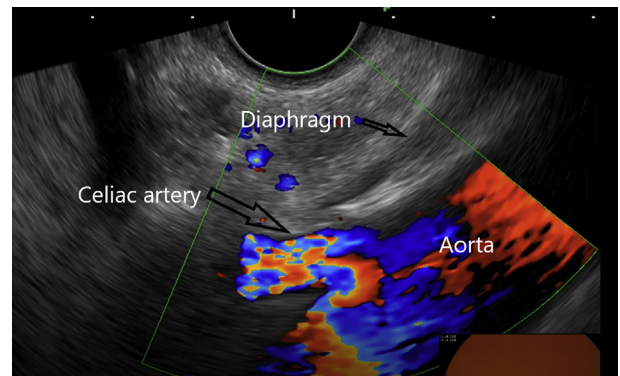


Figure 1. Sonographic view from the stomach showing the aorta, celiac artery, and diaphragm.

case was an elderly male with metastatic pancreatic head adenocarcinoma who had a VAS score of 8 and received 40 mg oral opioid analgesics every 4 hours. Both underwent EUS-guided celiac plexus RFA for pain control.

First, the EUS device was positioned in the stomach to locate the aorta, celiac artery, and diaphragm (Fig. 1). The tip of the 19-gauge Endoscopic ultrasound guided radiofrequency ablation (EUSRA) needle (Starmed; Taewoong Medical, Seoul, Korea) was introduced into the celiac plexus space (Fig. 2). We used Doppler to confirm that the needle tip was not intravascular. The ablation parameters were set as follows: radiofrequency power 30 W, continuance mode. Once the ablation began, within 12 seconds, the echogenic bubbles around the celiac plexus were visible on the EUS monitor and the impedance reached 400 Ω (Fig. 3). After 4 days, both patients' VAS score decreased to 3, without the need for opioid analgesics. Three weeks after the procedure, VAS score stabilized at 2 for the first patient and 4 for the second, thereby eliminating the need for opioid analgesics.

Common adverse events are similar to those of EUS-CPN and include transient diarrhea, orthostatic hypotension, fever, nausea/vomiting, and transient increase in abdominal pain, which are all considered minor.⁵

In our cases, no adverse events were noted; both patients were monitored for 24 hours, and they were stable during and after the procedure. The present treatment of pancreatic cancer pain with narcotics and EUS-CPN is

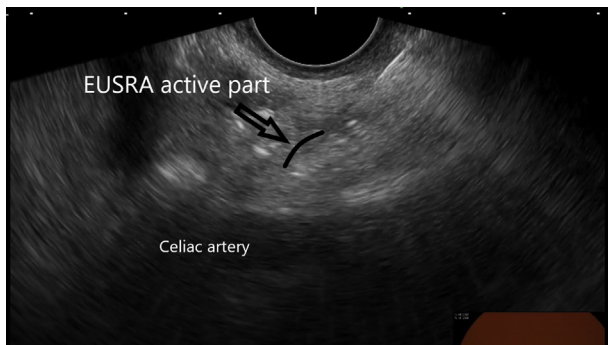


Figure 2. Sonographic view of the active part of the EUSRA located in the celiac plexus. EUSRA, EUS-guided radiofrequency ablation needle.

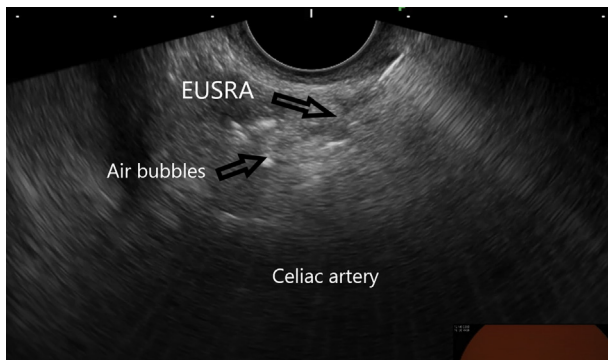


Figure 3. Sonographic view showing the echogenic bubbles around the celiac plexus denoting successful ablation.

inadequate. EUS-RFA may just be the beginning of improved regimens. Use of the Taewoong device appears to be a precise, feasible, safe, and effective technique. More studies are needed to better assess the long-term efficacy and safety of this novel technique.

DISCLOSURE

All authors disclose no financial relationships.

Abbreviations: CPN, celiac plexus neurolysis; EUSRA, endoscopic ultrasound guided radiofrequency ablation electrode; RFA, radiofrequency ablation; VAS, visual analog scale.

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