

EUS-guided botulinum toxin injection into the pyloric sphincter for the treatment of gastroparesis

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A 51-year-old man after esophagectomy for distal esophageal cancer developed severe gastroparesis. His symptoms of gastroesophageal reflux, chest pain, early satiety, and fullness in the chest were persistent despite medical treatment. An esophagogastroduodenoscopy (EGD) with pyloric botulinum toxin injection with a balloon dilation resulted in “>80%” symptomatic benefit for 3 months with relapse of significant symptoms thereafter. On

repeat EGD, food was found in the gastric body despite the patient being fasting consistent with delayed gastric emptying. The pylorus looked normal but appeared to contract “vigorously” suggesting pylorospasm [Figure 1]. A linear echoendoscope was passed to the duodenum bulb where the normal duodenal wall thickness was 2 mm (normal)

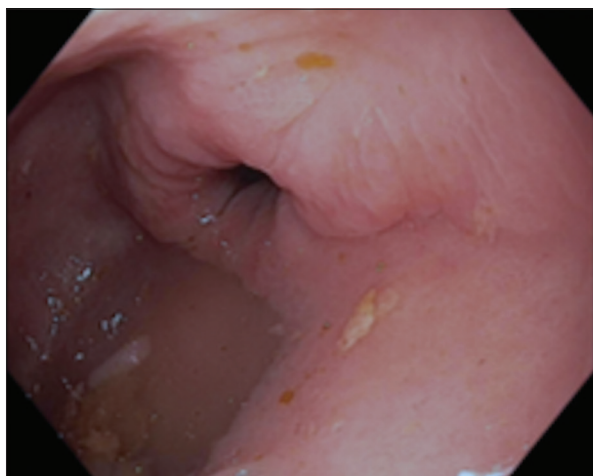



Figure 1. Pyloric sphincter seen during EGD that looked normal but appeared to contract vigorously during endoscopy suggesting pylorospasm



Figure 2. Normal duodenal bulb wall by EUS with a thickness of about 2 mm

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Figure 3. The pyloric sphincter as seen by EUS with total thickness of 7–8 mm with the needle implanted under EUS guidance in the muscularis propria

[Figure 2]. As the echoendoscope was withdrawn to the level of the pylorus at the pyloric sphincter, it revealed a stark change with a thickness of 7–8 mm. A 25G endoscopic ultrasound-guided fine-needle aspiration needle was inserted into the muscular region of the pyloric sphincter deeper to the mucosa/submucosa but superficial to serosa. The pyloric sphincter was precisely injected with a total 100 U (25 U/mL in 4 quadrants) of botulinum toxin [Figure 3] followed by pyloric balloon dilation to 20 mm, without immediate or delayed adverse effects. The patient again had significant response to treatment which lasted for twice the duration for 6 months.

The standard technique of botulinum toxin injection into the pylorus is done during EGD with an injection needle without any additional imaging guidance.^[1,2] The drug may be delivered mostly in the submucosa or only partly into the muscularis propria. A technique for more precise delivery of the drug to the muscularis propria could potentially improve the duration (as seen in this patient) and degree of response. Further prospective studies of this technique would be worthwhile.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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