

Endoscopic Pyloromyotomy for the Treatment of Benign Pyloric Stenosis

by Kimberly J. Kolkhorst, Jeffrey Gill

We report the case of a 62-year-old female with a history migraines and non-steroidal anti-inflammatory drug (NSAID) use who presented to the emergency department with epigastric abdominal pain associated with intermittent nausea and vomiting for two months. Initial esophagogastroduodenoscopy (EGD) revealed a pyloric channel ulcer and pyloric stenosis with inability to pass a standard upper endoscope. The pyloric stenosis persisted after 10 weeks despite discontinuation of NSAIDs, initiation of twice daily proton pump inhibitor (PPI) and serial balloon dilations. The pyloric narrowing was subsequently treated with the application of a needle knife papillotome to all four quadrants and a second pyloromyotomy two months later. Repeat EGD at four months revealed a widely patent pylorus and the patient was asymptomatic at the time of this endoscopy.

INTRODUCTION

Benign pyloric stenosis, often occurring in the setting of peptic ulcer disease, may result in stricture of the pyloric channel causing patients to present with symptoms of gastric outlet obstruction. Currently, balloon dilation is the primary method of endoscopic treatment with progression to surgical myotomy in patients that are not relieved of their symptoms. Newer evidence suggests that needle knife papillotome pyloromyotomy, a novel endoscopic technique, may be used to successfully treat this condition.

Case Report

A 62 year-old female with a past medical history of nonsteroidal anti-inflammatory (NSAID) use and migraines presented with epigastric pain

associated with intermittent nausea and vomiting of two months duration. She admitted to a five pound weight loss over the symptomatic time period. Esophagogastroduodenoscopy (EGD) using a standard upper endoscope revealed a narrowed pyloric channel with inability to pass the endoscope (Figure 1). Subsequently, a pediatric endoscope achieved passage through the pyloric stenosis and a 1 cm ulceration was visualized within the pyloric channel. The remainder of the stomach, duodenal bulb and second portion of the duodenum appeared normal. Biopsies from the pyloric channel were negative for *Helicobacter pylori* and malignancy. Omeprazole 40mg twice daily was initiated and the patient was instructed to abstain from NSAIDs for two months. However, despite medical treatment, her symptoms of epigastric pain, nausea and vomiting persisted.

Repeat endoscopic exam at two months revealed persistent pyloric stenosis again with the inability to

(continued on page 76)

Kimberly J. Kolkhorst, DO Jeffrey Gill, MD, University of South Florida, Department of Gastroenterology, Tampa, Florida

A CASE REPORT

(continued from page 74)

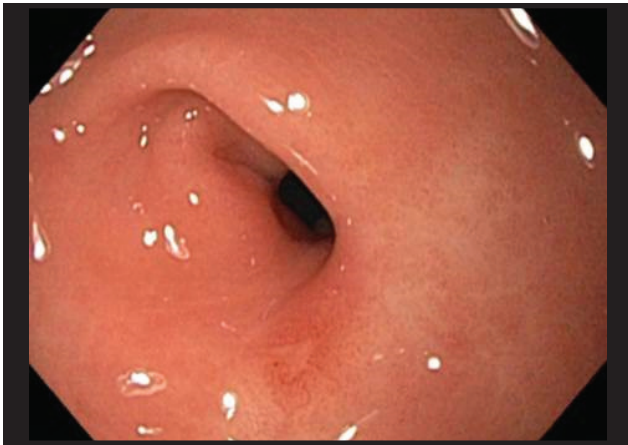


Figure 1. Scarred pyloric stenosis with severe narrowing and inability to pass an upper endoscope

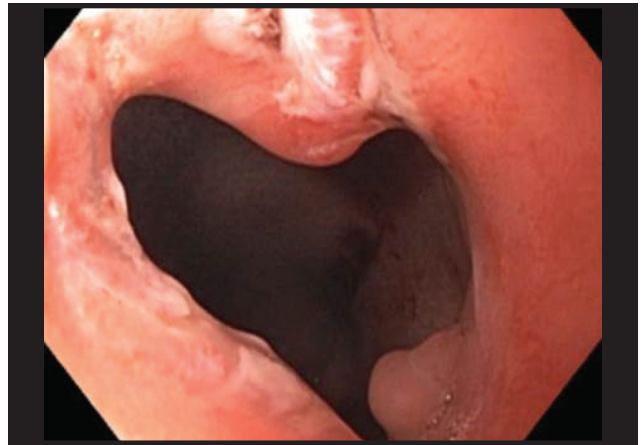


Figure 2. Patent pylorus after the second endoscopic pyloromyotomy treatment

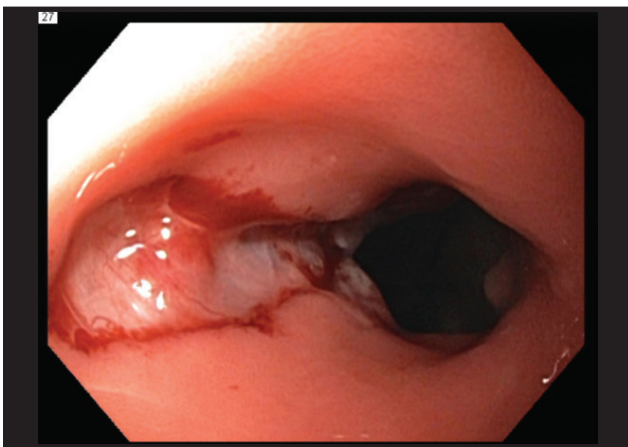


Figure 3. Post-dilation tear after endoscopic pyloromyotomy and subsequent balloon dilation

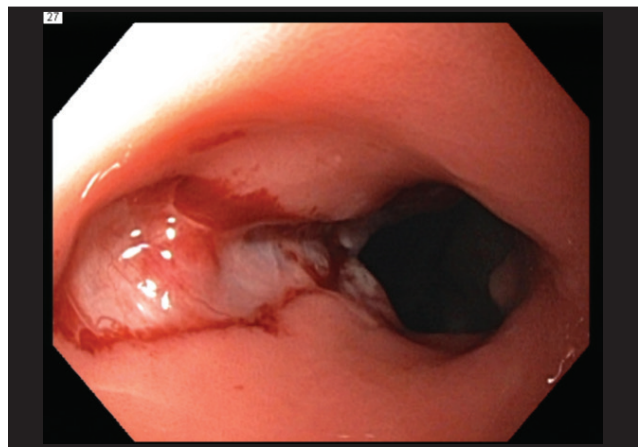


Figure 4. Wide open pylorus at four months with easy passage of the upper endoscope

pass the standard endoscope. The pyloric channel was dilated using through-the-scope (TTS) balloons from 10 to 12 mm for 60 second durations. Despite producing an appropriate mucosal tear, the endoscope still would not pass the stenosis and her symptoms remained unchanged. Continued pyloric stenosis was again noted at the follow-up endoscopy at two weeks, and additional TTS dilation, this time to 15mm, was performed. The TTS dilation was not successful and therefore, a needle knife papillotome was used to perform a pyloromyotomy by applying the knife to all four quadrants of the pylorus. Upon evaluation at two months, the patient's symptoms had improved, but still persisted and, on EGD, the standard endoscope still would not pass the stricture. A second pyloromyotomy

was performed with the needle knife papillotome (Figure 2), along with TTS balloon dilation to 18mm (Figure 3). At four months, the patient was finally asymptomatic, and the standard endoscope passed easily through a patent pylorus (Figure 4).

Discussion

Pyloric stenosis is an uncommon condition with various etiologies including congenital hypertrophic pyloric stenosis, malignant pyloric stenosis and benign pyloric stenosis. Congenital hypertrophic pyloric stenosis usually presents in children. Malignant pyloric stenosis is seen more in adults and is associated with primary gastric cancers or metastatic lesions. Benign pyloric stenosis is often seen in adults and due to scarring from

chronic peptic ulceration or, as in the case presented above, secondary to NSAID use. Patients with pyloric stenosis may present with symptoms of gastric outlet obstruction. Standard treatments include endoscopic balloon dilation, surgical pyloroplasty or surgical distal gastrectomy.¹ Endoscopic balloon dilation is considered first-line therapy for benign cases of pyloric stenosis.² Pyloric stenosis that is refractory to two dilations is considered high risk for endoscopic failure and, as a result, surgical intervention is often recommended.²

Needle knife papillotome electroincision of strictures was first applied to refractory Schatzki rings³ and later to esophagogastric and colocolonic anastomotic strictures.^{4,5} The technique was described for endoscopic pyloromyotomy in infants with congenital pyloric stenosis in 2005 with 100% success rate.⁶ Peroral endoscopic pyloromyotomy (POP) is a similar technique that has been successfully performed in patients with medication refractory gastroparesis^{7,8} and in pigs with pyloric stenosis.⁹

Bleeding and perforation are potential complications of endoscopic pyloromyotomy; however, all previously documented procedures were performed by experienced therapeutic endoscopists and were without complication. The benefits to endoscopic pyloromyotomy, as compared to surgical pyloromyotomy, include lack of inpatient hospital stay, lower healthcare costs, no surgical scars or wound infections, no risk for the development of surgical adhesions and the ability to re-start per oral intake immediately.

Our case report is the first documented use of needle knife papillotome pyloromyotomy in an adult patient with refractory, benign pyloric stenosis and demonstrates the minimally-invasive, effective and safe utility of this technique. ■

References

1. Hellan M, Lee T, Lerner T. Diagnosis and therapy of primary hypertrophic pyloric stenosis in adults: case report and review of literature. *J Gastrointest Surg* 2006; 10: 265-269
2. Yusuf TE et al. Endoscopic therapy of benign pyloric stenosis and gastric outlet obstruction. *Current opinion in gastroenterology* 2006
3. DiSario JA, Pedersen PJ, Bichis-Cnoutas C, et al: Incision of recurrent distal esophageal (Schatzki) ring after dilation. *Gastrointest Endosc* 56:244-248, 2002.
4. Brandimarte G, Tursi A: Endoscopic treatment of benign anastomotic esophageal stenosis with electrocautery. *Endoscopy* 34:399-401, 2002.
5. Brandimarte G, Tursi A, Gasbarrini G: Endoscopic treatment of benign anastomotic colorectal stenosis with electrocautery. *Endoscopy* 32:461-463, 2000.
6. Iburguen-Secchia E: Endoscopic pyloromyotomy for congenital pyloric stenosis. *Gastrointest Endosc* 61:598-600, 2005.
7. Khashab MA, Stein E, Clarke JO, Saxena P, Kumbhari V, Chander Roland B, Kalloo AN, Stavropoulos S, Pasricha P, Inoue H. Gastric peroral endoscopic myotomy for refractory gastroparesis: first human endoscopic pyloromyotomy (with video) *Gastrointest Endosc*. 2013;78:764-768
8. Shlomovitz E, Pescarus R, Cassera MA, Sharata AM, Reavis KM, Dunst CM, Swanström LL. Early human experience with per-oral endoscopic pyloromyotomy (POP) *Surg Endosc*. 2015;29:543-551
9. Kawai M, Peretta S, Burckhardt O, Dallemagne B, Marescaux J, Tanigawa N. Endoscopic pyloromyotomy: a new concept of minimally invasive surgery for pyloric stenosis. *Endoscopy*. 2012; 44(2):169-173.

**PRACTICAL
GASTRO**
A Peer Review Journal

A Token of Our APPreciation© for Our Loyal Readers

Download PRACTICAL GASTROENTEROLOGY to your Mobile Device
Available for Free on iTunes, Google Play and Amazon

Add the App instantly to your iPad or iPhone:

<http://itunes.apple.com/us/app/practical-gastroenterology/id525788285?mt=8&ign-mpt=uo%3D4>

Add the App instantly to your Android:

<https://market.android.com/details?id=com.texterity.android.PracticalGastroApp>
<http://www.amazon.com/gp/product/B00820QCSE>