

# CASE REPORT

## EUS Guided Enterocolostomy for the Palliation of Malignant Small Bowel Obstruction From a Cecal Adenocarcinoma



Brandon Rodgers, Abraham Mathew, and Hadie Razjouyan

*Division of Gastroenterology and Hepatology, Penn State Milton S. Hershey Medical Center, Hershey, Pennsylvania*

**Malignant bowel obstruction is a challenging complication in advanced gastrointestinal malignancies with varying treatment strategies including medical, surgical and endoscopic therapies, each with their own limitations. Endoscopic ultrasound-guided enterocolostomy has been previously reported as an option for patients who are not surgical candidates or ideal candidates for enteral stenting. In this case, endoscopic ultrasound-guided enterocolostomy is used for the palliation in a patient with a completely obstructing large cecal adenocarcinoma who declined surgical intervention.**

**Keywords:** Endoscopic Ultrasound; Colon Cancer; Interventional EUS; Lumen Apposing Metal Stent

for cecal malignancy with associated obstruction (Figure 1). In addition, multiple presumed metastatic lesions were identified in the liver. The patient was transferred to our center for colorectal surgery evaluation. A nasogastric tube was placed for decompression and the patient was kept nothing by mouth. After extensive goals of care discussions with the patient and family, the patient declined surgical intervention and wished to focus on comfort and palliation. He was initially planned for gastrostomy tube placement for decompression, but a safe window for the procedure could not be obtained. Thus, gastroenterology was consulted to evaluate if colonic stenting or other endoscopic intervention

### Introduction

Malignant bowel obstruction is a challenging complication in advanced gastrointestinal malignancies, occurring in an estimated 10%–29% of colorectal cancers and can lead to significant morbidity and mortality.<sup>1</sup> Treatment is often multimodal including medical, endoscopic and surgical management but the optimal treatment approach is unknown. Interventional endoscopic ultrasound (EUS) is an evolving field with continually developing applications. With the advent of the use of lumen apposing metal stents (LAMS), interventional EUS has been used as a therapeutic strategy in a wide range of gastrointestinal malignancies and their complications,<sup>2</sup> including malignant bowel obstruction.<sup>3</sup> Here, we present a case using EUS to create an enterocolostomy for palliation in malignant small bowel obstruction due to a cecal mass.

### Case Report

A 76-year-old man presented to an outside hospital due to several days of abdominal pain, nausea, and vomiting in addition to change in bowel habits. He had noticed passage of small-caliber stools over the last 2 months. Computed tomography of the abdomen and pelvis was obtained which identified marked wall thickening in the cecal conus extending into the terminal ileum with proximal dilation of the entire small bowel and a fluid filled stomach concerning



**Figure 1.** Computed tomography of the abdomen and pelvis identifying cecal wall thickening, proximal small bowel dilation, and hepatic lesions concerning for malignant bowel obstruction with metastases.

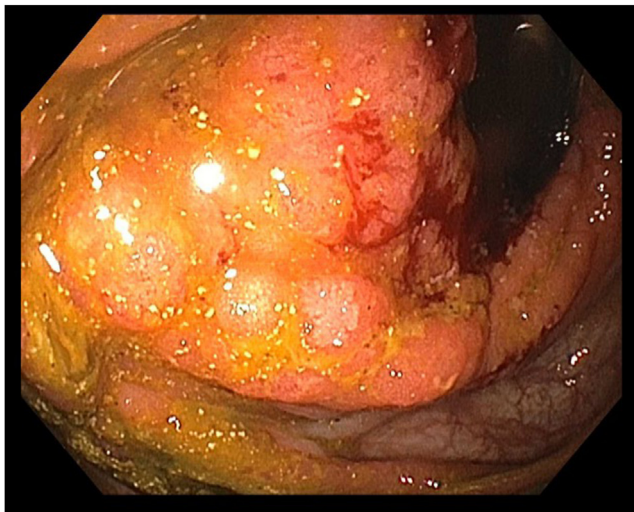
**Abbreviations used in this paper:** CT, computed tomography; EUS, endoscopic ultrasound; LAMS, lumen apposing metal stent.

Most current article

Copyright © 2024 The Authors. Published by Elsevier Inc. on behalf of the AGA Institute. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

2772-5723

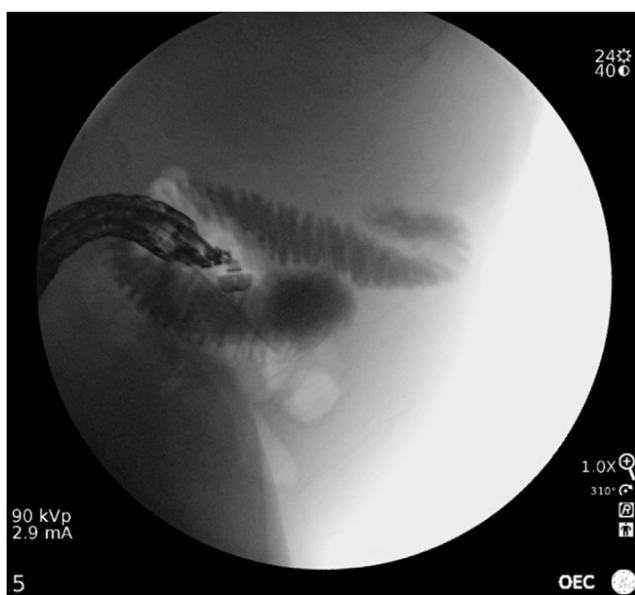
<https://doi.org/10.1016/j.gastha.2024.10.016>



**Figure 2.** Circumferential, obstructing ascending colon mass extending into the cecum identified on colonoscopy.

could be offered in attempts to address the small bowel obstruction as a palliative measure. Given the location of the mass, it was felt colonic stenting would be too high risk of perforation and migration, and unlikely to be successful. Therefore, after continued risk and benefit discussions with the patient and family, EUS-guided enterocolostomy with placement of a LAMS was pursued to relieve the obstruction.

A standard therapeutic upper endoscope was advanced to the cecum, where an obstructive circumferential mass was found in the proximal ascending colon extending into the cecum (Figure 2). Pathology ultimately revealed moderately differentiated invasive colonic adenocarcinoma.

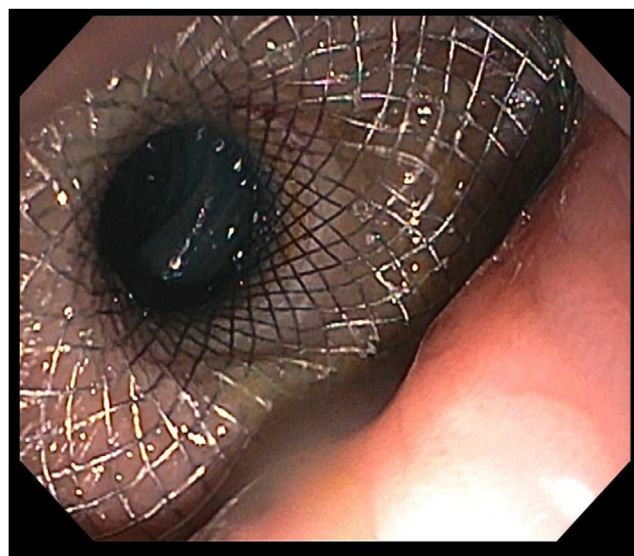


**Figure 3.** Fluoroscopic view of echoendoscope injecting contrast into small bowel loop to distend the lumen and facilitate LAMS placement.

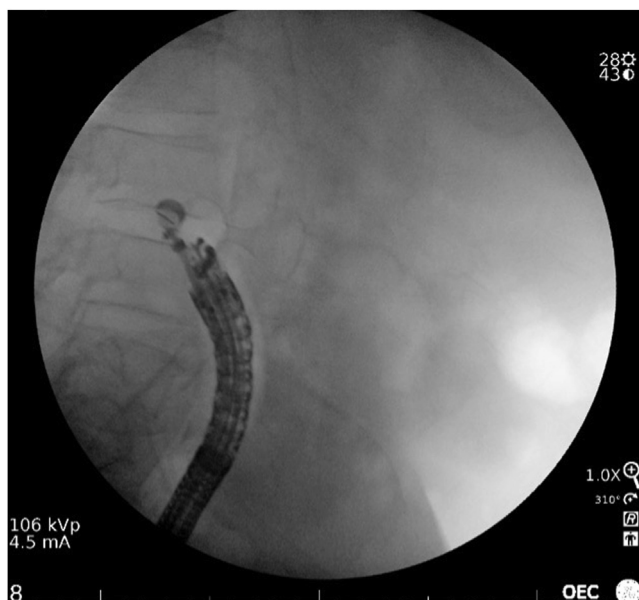


**Figure 4.** Targeted distended small bowel loop after EUS needle injection of normal saline and methylene blue.

A 0.0035-inch guidewire (Jagwire™ High Performance Guidewire; Boston Scientific, Marlborough, MA) was placed through the endoscope in the ascending colon. The therapeutic upper endoscope was exchanged over the guidewire for a linear echoendoscope. Using endosonographic view, loops of small bowel were identified above the bladder, but all were deflated. Using a 19-gauge EUS fine needle aspiration needle (Expect™ Endoscopic Ultrasound Aspiration Needle; Boston Scientific, Marlborough, MA) a loop of small bowel was punctured and location of the needle was confirmed by injection of contrast (Figure 3). Then, 800 mL of normal saline and methylene blue was injected, distending the small bowel loops (Figure 4). After identification of this target loop, the patient received 0.5 mg of glucagon to limit peristalsis and doppler was used to ensure there were no intervening vascular structures. Subsequently, a 20 mm × 10 mm LAMS (Hot AXIOS™ Stent; Boston



**Figure 5.** Endoscopic visualization after LAMS deployment.



**Figure 6.** Fluoroscopic image after LAMS deployment.

Scientific, Marlborough, MA) was used to puncture the wall of the colon and small bowel and deployed under both direct endoscopic and ultrasound views. After deployment of the LAMS, a large amount of blue fluid drained into the colon, confirming placement was in the small bowel loop previously distended with normal saline and methylene blue (Figures 5 and 6). The LAMS was dilated to 12 mm using a through the scope balloon dilator (CRE™ Balloon Dilator; Boston Scientific, Marlborough, MA). During the procedure, the patient received one dose of 3.375 g of piperacillin-tazobactam as antibiotic prophylaxis. The morning following his procedure, the patient had improvement of his abdominal pain, was now able to tolerate a diet and was discharged to home with hospice. On 1-month follow up phone call, the patient continued to have no abdominal pain and was having regular bowel movements.

## Discussion

The management of malignant bowel obstruction is multidisciplinary, multifactorial and is often driven by each patient's individualized goals of care. The feasibility of the creation of enteral bypass to relieve intestinal obstruction using the hot Axios system is well demonstrated in this case. Such an approach can be used in patients who are not surgical candidates or willing to undergo surgery, especially

when a colonic stent is not an ideal option. In addition, peritoneal metastases or multifocal strictures may prevent enteral stent placement from being an effective endoscopic strategy. EUS-guided enterocolostomy with LAMS has previously been shown as a new alternative for palliation of acute small bowel obstruction.<sup>3–6</sup> One consideration when performing this procedure is that it does require passage of the echoendoscope through an unprepped colon, which can be challenging. Therefore, in our case, a therapeutic upper endoscope was first used to navigate to the proximal colon so the echoendoscope could be exchanged over a wire. The small bowel on ultrasound was largely decompressed, likely due to nothing by mouth status and nasogastric tube suction over several days, which made initial EUS fine needle aspiration needle passage more challenging, requiring instillation of normal saline and methylene blue before LAMS placement. Overall, our case demonstrates and adds to the growing body of literature that EUS enterocolostomy placement with LAMS is an effective alternative strategy to address malignant small bowel obstruction in appropriately selected patients.

## References

1. Walter M, et al. *J Pain Symptom Manag* 2024; 67(1):20–26.
2. DeWitt JM, et al. *Clin Gastroenterol Hepatol* 2021; 19(1):24–40.
3. Jonica ER, et al. *Gastrointest Endosc* 2023; 97(5):927–933.
4. James TW, et al. *VideoGIE* 2020;5(9):428–430.
5. Sooklal S, et al. *VideoGIE* 2019;4(11):530–531.
6. Westerveld D, et al. *VideoGIE* 2022;7(3):109–111.

Received August 20, 2024. Accepted October 18, 2024.

### Correspondence:

Address correspondence to: Brandon Rodgers, MD, Division of Gastroenterology and Hepatology, Penn State Milton S. Hershey Medical Center, 500 University Drive, Hershey, Pennsylvania 17033. e-mail: [roddersbr2020@gmail.com](mailto:roddersbr2020@gmail.com) or [brodders3@pennstatehealth.psu.edu](mailto:brodders3@pennstatehealth.psu.edu).

### Conflicts of Interest:

The authors disclose no conflicts.

### Funding:

The authors report no funding.

### Ethical statement:

Informed patient consent was obtained for publication of the case details. IRB approval was not required for this retrospective case report.

### Reporting Guidelines:

CARE.