Case Report

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# Novel Use of Endoscopic Ultrasound to Manage Complication of a Percutaneous Gastrostomy Tube Placement

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**ABSTRACT**

**Abbreviations:** PEG: Percutaneous Endoscopic Gastrostomy; EUS: Endoscopic Ultrasound; OTSC: Over-the-Scope Clips

## Introduction

Percutaneous gastrostomy feeding tube placement (PEG tube) is a fairly common procedure performed in hospitals by Interventional Radiologists, Surgeons and Gastroenterologists. Complications such as bleeding, infection albeit rare are some of the potential immediate complications of a PEG tube placement. A more feared complication of a placement of a PEG tube is placement through another organ such as the colon or liver. We describe a case whereby Endoscopic Ultrasound (EUS) was used to manage such a complication.

## Case

A 78 year-old female with no significant past medical history was admitted to an outside hospital for management of chronic dysphagia, weight loss, and failure to thrive. Although vital signs were normal, physical examination was notable for a thin elderly cachectic appearing female. To address her dysphagia and failure to thrive, she underwent percutaneous endoscopic gastrostomy (PEG) placement. Although mild pain and tenderness may be expected one day after PEG placement, the patient reported abnormally significant pain requiring further evaluation. Therefore, a computed tomography scan was performed reporting transection of the PEG through the left lobe of the liver (Figure 1a). It was decided after discussion to transfer the patient to a tertiary care center. Once the patient was transferred, she was deemed to be high risk for any surgical intervention given her cachectic and malnourished state. Interventional Endoscopy was consulted for consideration of endoscopic removal. After discussing

risks/benefits with family of endoscopic removal as well as considering risks of surgical removal, it was decided to proceed with endoscopic removal. After sedation and intubation, a linear echoendoscope was passed to her stomach to visualize the liver. Endoscopic ultrasound confirmed liver transection; however, no major hepatic blood vessels were traversed (Figure 1b). Doppler flow was used to confirm lack of vascular penetration. Since the risk of hematoma development after PEG tube removal was likely low, it was deemed appropriate to proceed with PEG tube removal.

After removal of the echoendoscope, the external portion of the PEG tube was cut (Figure 1c). An upper endoscope was then passed and the internal bumper and the remainder of the shaft of the PEG tube was removed with the help of a snare. Next, the resulting fistulous tract was closed with an over-the-scope clip (Ovesco, 11/6, Germany) (OTSC) (Figures 1d & 1e). The linear echoendoscope was then re-introduced where the liver was reassessed. No obvious evidence of bleeding or hematoma was found on EUS. Finally, the scope was removed, and the external defect was left to heal by secondary intention. The next day, the patient reported resolution of abdominal pain and no leakage was found on inspection. Hemoglobin remained stable. Despite the successful outcome of the procedure, the patient was transitioned to comfort care for reasons unrelated to the EUS-guided PEG tube removal.

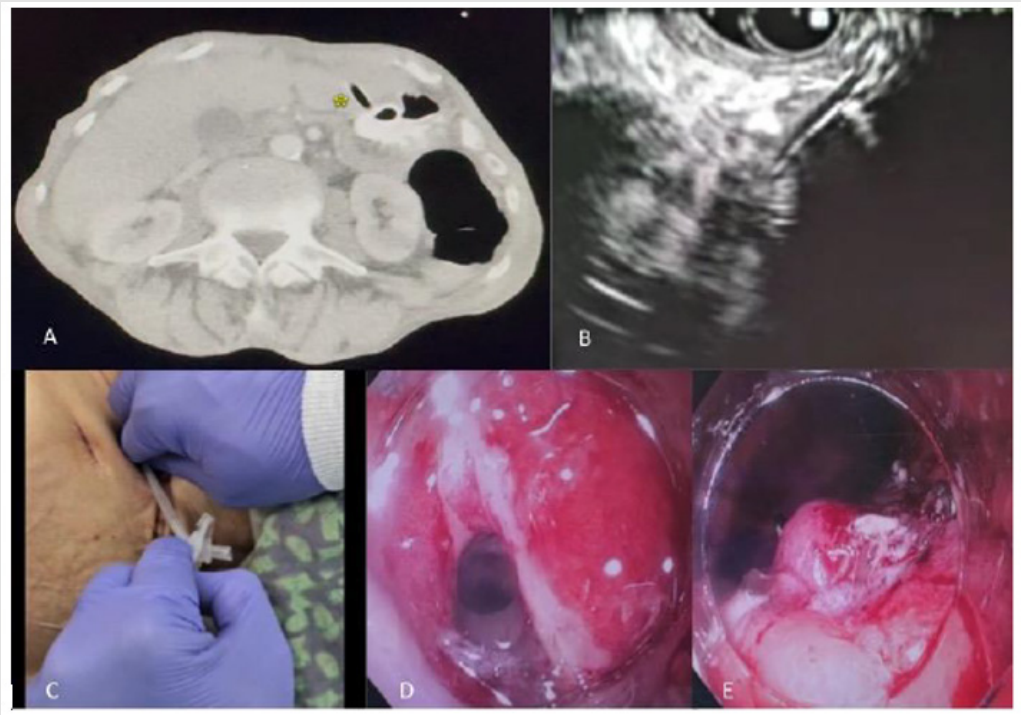


**Figure 1.**

## Discussion

Percutaneous endoscopic gastrostomy (PEG) placement is a common procedure with multiple indications from chronic dysphagia to nutritional support. However, complications can occur including leakage, bleeding, fistula formation, and more [1]. Transection of the liver is a rare complication with one study documenting seven total cases reported in literature [2]. Although abdominal pain may be the most common symptom, other symptoms may include fever, nausea, transaminitis, PEG tube malfunction, or even no symptoms [2-7]. Prompt diagnosis by ultrasound or CT scan is imperative to confirm liver transection. Although laparotomy and conservative management were the most common reported treatments, Endoscopic Ultrasound (EUS) guided evaluation may provide an effective alternative for management of PEG tube-related liver transections [2]. Since the implementation of EUS in gastroenterology, advanced endoscopists have discovered creative methods to improve patient outcomes while avoiding unnecessary surgeries. This case highlights an unfortunate rare complication from PEG tube placement. However, endoscopy could play a role in safely removing the PEG tube from the transected liver while closing the defect internally. In our case, EUS was initially used to evaluate if any hepatic blood vessel was traversed. If the EUS recognized a traversed blood vessel, the risk of hemorrhage or hematoma formation would be high if the PEG tube was to be removed endoscopically and alternative management would be warranted.

In such scenario, removal of PEG tube should be performed in Interventional radiology suite or the Operating Room with standby assistance from interventional radiologist or surgeon respectively. Fortunately, this patient had no traversed blood vessel; therefore, it was deemed appropriate to remove. Second, given that the PEG tube was traversing the liver, external removable would simply result in more trauma to the liver. Hence the tube was cut, and the internal bumper retrieved endoscopically, thereby achieving an atraumatic removal of the PEG. Once the PEG tube was removed, the gastro-hepato-cutaneous tract would need to be addressed. Over-the-scope clips (OTSC) are emerging endoscopic devices growing in popularity. They have been successfully used to close large ulcers, perforations, and fistulas [8]. To prevent the risk of leakage or fistula formation, an OTSC was successfully deployed. Lastly, once the PEG tube is removed and the OTSC placed, EUS was performed to help confirm any intra-hepatic/ extra hepatic bleeding or expanding hematomas that may require further intervention. As EUS becomes more accessible, the field will require more creative approaches regarding its use. This case provides a creative way to implement EUS after a PEG complication. By anticipating potential complications with removing the PEG, EUS was used to locate potential blood vessels that may have been traversed. Therefore, EUS evaluation provided safe PEG removal knowing the bleeding risk was likely low. Endoscopic ultrasound has many therapies to offer; however, future documentation of unusual cases will help providers identify opportunities for its potential use.

## References

1. Park JW, Kim TG, Cho KB, Jeong Seok Kim, Jin Woong Cho, et al. (2024) A Multicenter Survey of Percutaneous Endoscopic Gastrostomy in 2019 at Korean Medical Institutions. Gut Liver 18(1): 77-84.
2. Chhaparia A, Hammami MB, Bassuner J, Hachem C (2018) Trans-Hepatic Percutaneous Endoscopic Gastrostomy Tube Placement: A Case Report of A Rare Complication and Literature Review. Gastroenterology Res 11(2): 145-149.
3. Gubler C, Wildi SM, Bauerfeind P (2005) Liver injury during PEG tube placement: Report of two cases. Gastrointestinal endoscopy 61(2): 346-348.
4. Chaer RA, Rekkas D, Trevino J, Brown R, Espat J (2003) Intrahepatic placement of a PEG tube. Gastrointestinal endoscopy 57(6): 763-765.
5. Wiggins TF, Kaplan R, DeLegge MH (2007) Acute hemorrhage following transhepatic PEG tube placement. Digestive diseases and sciences. 52(1): 167-169.
6. Herta T, Hecker M, van Boemmel F, Hoffmeister A, Karlas T (2015) Sonographic diagnosis of transhepatic placement of a percutaneous endoscopic gastrostomy (PEG) tube. Endoscopy 47(Suppl 1 UCTN): E453-E454.
7. Burke DT, Geller AI (2009) Peritonitis secondary to the migration of a trans-hepatically-placed percutaneous endoscopic gastrostomy tube: a case report. Arch Phys Med Rehabil 90(2): 354-357.
8. Kirschniak A, Subotova N, Zieker D, Königsrainer A, Kratt T (2011) The Over-The-Scope Clip (OTSC) for the treatment of gastrointestinal bleeding, perforations, and fistulas. Surgical endoscopy 25(9): 2901-2905.

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