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Single Case

Rectal Bleeding after Insertion of a Percutaneous Endoscopic Gastrostomy Tube

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Keywords

Percutaneous endoscopic gastrostomy · Complication · Rectal bleeding

Abstract

Iatrogenic injury to an internal organ such as the stomach, colon, small bowel, or liver after percutaneous endoscopic gastrostomy (PEG) tube insertion is a rare complication. We present a case of rectal bleeding due to colon injury during PEG tube placement. This required urgent exploratory laparoscopic surgery with segmental resection of the transverse colon and replacement of the PEG tube. Postoperatively, the patient significantly improved with time and tolerated PEG tube feeding.

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Introduction

Percutaneous endoscopic gastrostomy (PEG) tube placement is one of the most common endoscopic therapeutic procedures performed worldwide. It was described by Ponsky and Gauderer [1] in 1980. PEG is a specialist technique that creates an artificial access route to the stomach through the skin and the anterior abdominal wall to provide mid- to long-term enteral nutrition, medication, hydration, and stomach decompression [2, 3]. The list of indications for PEG use has expanded over the years; apart from nutrition and survival, they now include improvement in quality of life and palliation in malignancy. Common indications include dysphagia due to neurological sequelae, esophageal or head and neck cancer, and functional or anatomical insult to the upper gastrointestinal tract [3]. In addition, it is used to support nutrition in cases of cystic fibrosis, congenital anomalies, and inflammatory bowel disease [4].

A PEG tube can be inserted endoscopically, surgically, or radiologically. However, due to its ease, cost-effectiveness, and safety profile, as well as avoidance of radiation, the endoscopic method has emerged as the preferred method [2, 4]. Appropriate placement of the PEG tube is imperative to avoid complications. Three different techniques have been described for endoscopic insertion: the “pull” approach as reported by Ponsky and Gauderer, which was modified to some degree to add a new “push” procedure, as well as a further refinement, leading to the “introducer” technique [5], a new, simplified, and cost-effective technique [6].

The pull approach remains the preferred one, and it was used in our case. This technique requires an assistant to the endoscopist. Briefly, one of the key steps of this technique is the diligent location of the site of PEG tube insertion, achieved via good transillumination of the stomach by endoscopic light by the assistant. The assistant then indicates this site by putting his finger on it, creating an indentation in the stomach wall that is corroborated by the endoscopist. Once the site is confirmed, it is made aseptic and a trocar is punctured through while the tip is being visualized endoscopically. A wire is threaded through this trocar, grasped endoscopically, and pulled out of the mouth. The PEG tube is loaded onto the wire and pulled by the assistant through the puncture site and fastened to the abdominal wall [7].

Although it is usually considered a safe procedure, PEG tube insertion may cause complications. These can be anything from minor complications like simple wound infections, tube blockage, and simple pneumoperitoneum to life-threatening complications like buried bumper syndrome, perforation of the bowel, and even death; however, this is rare and seen mainly in elderly patients with comorbidities [4]. Use of the correct technique of PEG tube insertion with proper positioning of the external fixation device, suitable prophylactic antibiotics, and daily tube care are essential to prevent the occurrence of severe complications [2]. Here, we present the rare complication of iatrogenic lower gastrointestinal bleeding due to colon injury during PEG tube placement.

Case Presentation

An 80-year-old male patient with known diabetes mellitus and essential hypertension presented with a stroke (bilateral thalamic, left occipital, and brain stem), which left him quadriplegic, bedridden, and dysphagic. To support nutrition, nasogastric tube feeding was initiated and continued for 3 weeks. There was no improvement in his dysphagia and a prolonged need for nutrition was recognized. A decision to insert a PEG tube was taken at a joint multidisciplinary meeting of the nutritionist, gastroenterologist, and primary team physician.

A 20-Fr (6.7-mm) tube was inserted using the pull-through technique, and the position of the bumper was confirmed endoscopically in the body of the stomach. No immediate technical difficulties or postprocedural complications were encountered. His vital signs and complete blood count remained stable before and after the procedure, as shown in [Table 1](#).

Ten days later, the patient developed bleeding per rectum, which initially was intermittent, bright-red blood mixed with stool. As this was not associated with any instability of his vital signs or change in complete blood count, an elective colonoscopy was requested. However, 48 h later the rectal bleeding became profuse, with passing of large clots. Apart from tachycardia, the blood pressure remained stable, as shown in [Table 2](#). On examination, the abdomen was soft with normal bowel sounds and no distention or tenderness. A rectal examination revealed fresh red blood with no palpable mass. His hemoglobin level dropped from 13.4 to 9.6 mg/dL, and his white cell count increased to $18.3 \times 10^9/L$. Due to ongoing significant rectal bleeding with clots, it was decided to perform an endoscopy, starting with a gastroscopy to rule out an upper gastrointestinal source and then proceeding to colonoscopy.

Investigations

Upper endoscopy showed no evidence of upper gastrointestinal bleeding, and the PEG tube was noted to be in situ with no evidence of bleeding or any blood until the second part of the duodenum ([Fig. 1](#)). Colonoscopy showed blood clots in the rectum up to the transverse colon, where a white glistening foreign body was noted. The PEG tube was clearly identified after cleaning and washing to be traversing the transverse colon ([Fig. 2](#)).

Treatment

Due to ongoing bleeding, the patient underwent urgent exploratory laparoscopic surgery. The PEG tube was found traversing the anterior abdominal wall and the stomach, with the transverse colon interposed. Segmental transverse colon resection was performed, with removal of the PEG tube and placement of a new one.

Outcome and Follow-Up

Following the operation there was no more rectal bleeding, and the patient tolerated feeding through the PEG tube without any complications.

Discussion and Conclusion

PEG tube placement is one of the safest procedures, with low rates of mortality and morbidity. The overall complication rate varies between 4 and 23%, with most of the complications being minor [3, 8]. The most frequent complications include wound infection, tube blockage or dislodgment, peristomal leakage, pneumoperitoneum, bleeding, aspiration pneumonia, buried bumper syndrome, and, rarely, necrotizing fasciitis [2]. Injuries to an internal organ such as the stomach, colon, small bowel, or liver have been reported, and they can present during insertion or later as bleeding, pneumoperitoneum, leakage, fistula, or peritonitis [2].

A very rare complication like gastrocolocutaneous fistula can occur when the PEG tube is inadvertently placed through the colon into the stomach. It can present acutely as abdominal distention, fever, pneumoperitoneum, or ileus [2, 9]. However, most cases remain asymptomatic and are discovered late following tube replacement when the tube is misplaced into the colon, leading to diarrhea or feculent discharge at the PEG site [10]. A higher-than-usual anatomical location of the colon and gastric distention due to excess air may interpose the transverse colon between the stomach and the abdominal wall, causing the PEG tube to transverse the colon during insertion [9–11]. A good PEG tube insertion technique with a combination of excellent transillumination, careful visualization via finger indentation of the gastric wall, and appropriate insufflation may help prevent this from happening [2]. In addition, using a “safe tracts” technique at the time of insertion – by aspirating the syringe, looking for any air before the appearance of the needle in the stomach, and by placing the head up to displace the colon caudally – may avert this complication [8, 12].

Our case highlights an unusual presentation of gastrocolocutaneous fistula following PEG tube insertion in the form of rectal bleeding that had not been reported before. It aims to increase awareness of this complication and its varied presentations, as well as to emphasize the need for good PEG tube insertion techniques.

Statement of Ethics

The patient gave written informed consent to publish the case (including publication of images).

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

G. Alhazmi participated in sequence alignment, coordination and data collection, wrote the paper, and finalized the final draft of the manuscript. M. Alsabri and S. Alsuwat participated in data collection and wrote the paper. A. Al-Zangabi and A. Al-Zahrani reviewed the final draft of the manuscript. M.K. Shariff participated in sequence alignment and coordination and reviewed the final draft of the manuscript. All authors read and approved the final manuscript.

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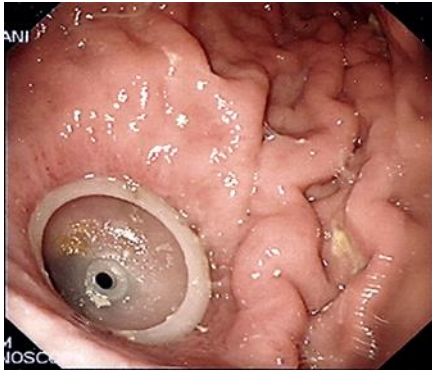


Fig. 1. Upper endoscopy image showing the percutaneous endoscopic gastrostomy tube in situ.

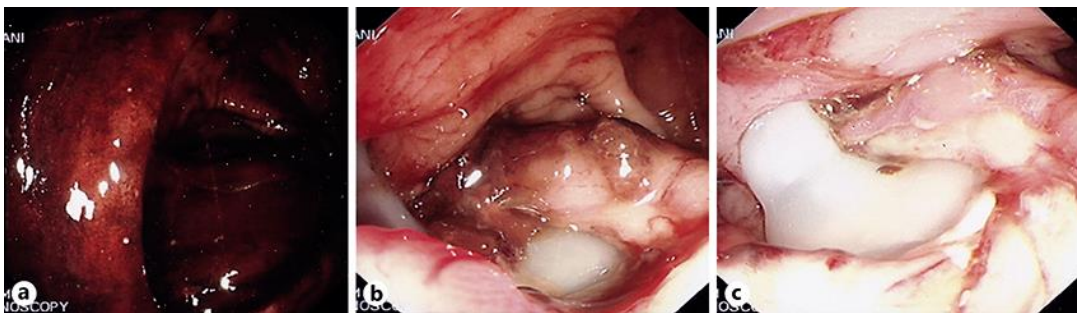


Fig. 2. Colonoscopy showed that the percutaneous endoscopic gastrostomy tube was traversing the transverse colon. **a** Initial view of the transverse colon with fresh blood. **b, c** Following washing, the white glistening percutaneous endoscopic gastrostomy tube was visible (**b**), more obvious on further washing (**c**).

Table 1. Patient's CBC and vital signs before PEG tube insertion

CBC		Vital signs	
Hemoglobin	13.4 g/dL	Heart rate	96 bpm
White blood cell count	$14.6 \times 10^9/L$	Oxygen saturation	99%
Platelet count	$297 \times 10^9/L$	Blood pressure	124/82 mm Hg
		Temperature	36.9°C
		Respiration rate	20 breaths/min

CBC, complete blood count; PEG, percutaneous endoscopic gastrostomy.

Table 2. Patient's CBC and vital signs after rectal bleeding

CBC		Vital signs	
Hemoglobin	9.6 g/dL	Heart rate	120 bpm
White blood cell count	$18.3 \times 10^9/L$	Oxygen saturation	97%
Platelet count	$290 \times 10^9/L$	Blood pressure	121/81 mm Hg
		Temperature	37.2°C
		Respiration rate	27 breaths/min

CBC; complete blood count.