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# Surgical approach to a delayed presentation of gastrocolocutaneous fistula following percutaneous endoscopic gastrostomy

Srikanth Parsi, Gustavo Franco, Viney Setya

## ABSTRACT

**Introduction: Gastrocolocutaneous fistula is a rare complication of percutaneous endoscopic gastrostomy tube placement that can present early at the time of insertion or late due to misplacement of gastrostomy tube through colon. It is suspected if there is profuse diarrhea after each tube feed, feculent drainage through or around the gastrostomy tube. Case Report: We report a rare case of gastrocolocutaneous fistula after two years of percutaneous gastrostomy tube insertion which was managed by surgical excision of fistula. Conclusion: Adherence to safety measures by the healthcare professionals at the time of gastrostomy tube insertion helps in preventing gastrocolocutaneous fistula.**

**Keywords: Gastrocolocutaneous fistula, Percutaneous endoscopic gastrostomy, Surgical approach**

How to cite this article

Parsi S, Franco G, Setya V. Surgical approach to a delayed presentation of gastrocolocutaneous fistula following percutaneous endoscopic gastrostomy. J Case Rep Images Surg 2016;2:105–108.

Article ID: 100035Z12SP2016

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Received: 20 May 2016
Accepted: 29 June 2016
Published: 23 December 2016

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doi:10.5348/Z12-2016-35-CR-27

## INTRODUCTION

Percutaneous endoscopic gastrostomy (PEG) tube placement was first described by Gaurderer et al. in 1980 [1]. Since then PEG has become a safe, effective and well accepted procedure for enteral nutrition in patients who cannot tolerate oral intake for a prolonged period of time [1].

Percutaneous endoscopic gastrostomy, although a safe procedure, can be associated with variety of complications. Minor complications include wound infection, bleeding, skin excoriation, leakage and granulation tissue at the PEG site. Major complications include peritonitis, intestinal obstruction, tube dislodgement and gastro enteric fistula formation [2]. Gastrocolocutaneous fistula is a rare complication of PEG insertion which can present early or late due to misplacement of PEG tube through colon. We present a rare case of gastrocolocutaneous fistula after two years of PEG insertion.

## CASE REPORT

An 81-year-old male nursing home resident with multiple medical co-morbidities underwent a PEG placement more than two years ago at an outside hospital for dysphagia secondary to stroke. He was admitted under medical service for pneumonia. He had no previous abdominal surgeries apart from PEG insertion. After a few days of hospital admission, feculent material was observed around the PEG tube and intermittent diarrhea with tube feeding. Clinical suspicion of a gastrocolocutaneous fistula was made. Percutaneous endoscopic gastrostomy feedings were held and total parenteral nutrition was initiated.

Gastrografin study via G-tube and barium enema failed to demonstrate the fistula. Further imaging by computed tomography (CT) scan of the abdomen with contrast via PEG tube was done because of high clinical suspicion of gastrocolocutaneous fistula. It raised the possibility of gastrocolocutaneous fistula since the majority of contrast was seen in the large bowel with little contrast in the small bowel (Figure 1). Since he continued to drain feculent material, a decision was made to perform open surgical exploration. Intraoperatively, we identified the G-tube passing through the colon and into the stomach. He underwent stapled excision of gastro-colic fistula with reinforcement of the staple line with 3-0 polysorb (Figure 2A–B). The anterior colonic opening was closed with the same 3-0 polysorb and the fistula tract was excised (Figure 2C). A new gastrostomy tube was placed away from the stapled site on the stomach. The fascia was closed and skin was approximated loosely in view of high risk of infection. The patient did well following surgery and tolerated tube feeds without any further complications.

## DISCUSSION

The incidence of gastrocolocutaneous fistula following PEG insertion is 0.5% in adults and 2–3% pediatric population [3]. Although the exact mechanism for gastrocolocutaneous fistula is unknown, various theories have been postulated. The most accepted theory is interposition of the colon between the anterior abdominal wall and the stomach at the time of insertion of PEG tube [4]. As a result, the tube inadvertently passes through the colon into stomach. Adhesions from previous operations and excessive air insufflation into the stomach to facilitate trans illumination, especially in children, predispose to colonic interposition. Despite misplacement of the PEG tube, it may function normally unless excessive traction on the tube causes it to migrate from the stomach to the colon. If a PEG tube needs to be exchanged due to leaking, clogging or dislodging, it is a possibility that the reinserted PEG tube is directed into the transverse colon rather than the stomach. Based on the review of literature, most cases of gastrocolocutaneous fistula present after PEG replacement [5]. In our case, although the mechanism of gastrocolocutaneous fistula was due to misplaced PEG tube, there was no history of recent PEG reinsertion.

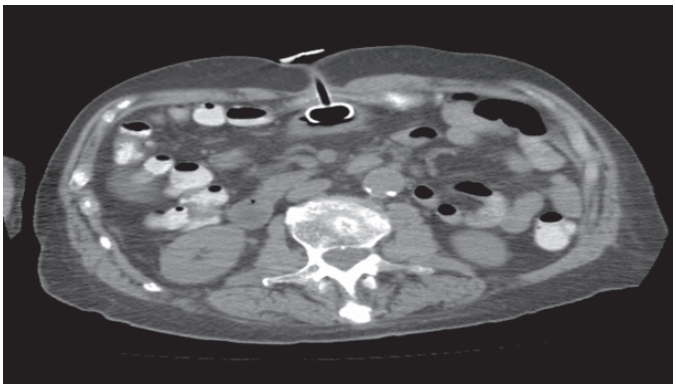

Figure 1: Computed tomography scan of abdomen revealing gastrocolocutaneous fistula.

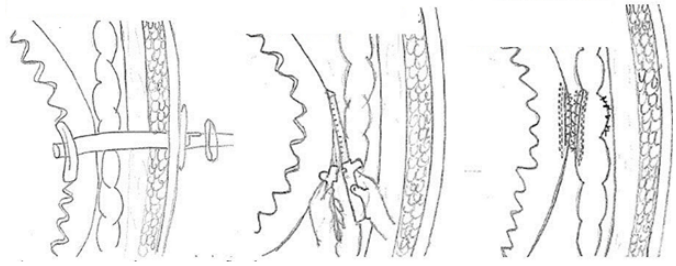

Figure 2: (A) Gastrocolocutaneous fistula, (B) Stapling of gastrocolic fistula by GIA staples, (C) Reinforcement of staple line and closure of anterior colonic opening.

The presentation of patients with gastrocolocutaneous fistula is varied. However, the most common symptom is profuse diarrhea with each tube feeding. Others present with fecal content in the tube, feculent discharge around the tube, severe malnutrition despite tube feedings. Some are found incidentally on imaging for other reasons. The time of presentation of gastrocolocutaneous fistula is usually days to weeks after PEG insertion. Some may present after a few months, but rarely after eight months [6]. In this case, the patient presented with gastrocolocutaneous fistula two years after the PEG insertion. There have been no case reports of such a late presentation. Diagnosis of gastrocolocutaneous fistula is based on clinical and radiological suspicion. Initially gastrografin study via the PEG is recommended to confirm the clinical finding. If the fistula is not visualized, a barium enema or a gastrografin enema can be used to visualize it because of greater pressure generated by this procedure [7]. Barium enema is reported as the test of choice for diagnosis [8]. However, despite using both fluoroscopy and barium enema, we were not able to demonstrate the fistula in the patient. Abdominal CT scan with intraluminal contrast was helpful in identifying the gastrocolocutaneous fistula, which has not been discussed in previous studies. Abdominal X-ray, EGD, colonoscopy is rarely utilized to identify such type of fistula.

There is no general consensus in the management of gastrocolocutaneous fistula. Various treatment options have been suggested, ranging from conservative approach of PEG removal and nasogastric tube placement to surgical exploration [5]. In our case, we chose the surgical approach by removing the PEG tube, excision of the gastrocolocutaneous fistula and placement of a new gastrostomy tube. As opposed to conservative management, the surgical approach avoided further risk of gastrocolocutaneous fistula formation with another PEG tube placement later.

The gastrocolocutaneous fistula can be prevented by adhering to strict safety measures at the time of PEG insertion.

Gastroenterologists and surgeons have to keep in mind the possibility of interposition of colon between anterior abdominal wall and stomach. Precautions such as clear visualization of trans illumination through the abdominal wall and imprint of finger pressure at the site of insertion should be strictly observed. Avoid excess air insufflation in the stomach during the procedure. If air is aspirated into the syringe before needle tip is seen in the stomach, suspect colonic interposition [9]. A mature fistulous tract usually develops approximately 2–4 weeks' after PEG placement. If PEG tube gets dislodged early on, avoid blind reinsertion. However, blind reinsertion can be performed if the PEG tract is matured [10].

## CONCLUSION

Gastrocolocutaneous fistula is a rare complication of percutaneous endoscopic gastrostomy (PEG) tube placement that can present anytime from the time of insertion. It usually occurs after PEG reinsertion in patients with a previously misplaced G-tube. Gastrocolocutaneous fistula is suspected if there is profuse diarrhea after each tube feed, feculent drainage through or around the gastrostomy tube. Imaging studies such as PEG fluoroscopy, barium or gastrografin enema and computed tomography abdomen with intraluminal contrast helps to identify most cases of gastrocolocutaneous fistula. This complication can be managed conservatively by removal of the PEG tube or by surgical excision, especially in patients with peritonitis. Adherence to safety measures by the healthcare professionals at the time of PEG insertion helps in preventing gastrocolocutaneous fistula.

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### Author Contributions

Srikanth Parsi – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Gustavo Franco – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published
Viney Setya – Analysis and interpretation of data, Revising it critically for important intellectual content, Final approval of the version to be published

### Guarantor

The corresponding author is the guarantor of submission.

### Conflict of Interest

Authors declare no conflict of interest.

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## REFERENCES

1. Gauderer MW, Porisky JL, Iznat RJ Jr. Gastrostomy without laparotomy: A percutaneous endoscopic technique. J Pediatr Surg.1980;15(6):872–85.
2. Kutiyanawala MA, Hussain A, Johnstone JM, Everson NW, Nour S. Gastrostomy complications in infants and children. Ann R Coll Surg Engl. 1998 Jul;80(4):240–3.
3. Larson DE, Burton DD, Schroeder KW, DiMagno EP. Percutaneous endoscopic gastrostomy. Indications, success, complications, and mortality in 314 consecutive patients. Gastroenterology. 1987 Jul;93(1):48–52.
4. Yamazaki T, Sakai Y, Hatakeyama K, Hoshiyama Y. Colocutaneous fistula after percutaneous endoscopic gastrostomy in a remnant stomach. Surg Endosc. 1999 Mar;13(3):280–2.
5. Friedmann R, Feldman H, Sonnenblick M. Misplacement of percutaneously inserted gastrostomy tube into the colon: report of 6 cases and review of the literature. JPEN J Parenter Enteral Nutr. 2007 Nov-Dec;31(6):469–76.
6. Kirby DF, Delegge MH, Fleming CR. American Gastroenterological Association technical review on tube feeding for enteral nutrition. Gastroenterology. 1995 Apr;108(4):1282–301.
7. Stefan MM, Holcomb GW 3rd, Ross AJ 3rd. Cologastric fistula as a complication of percutaneous endoscopic gastrostomy. JPEN J Parenter Enteral Nutr. 1989 Sep-Oct;13(5):554–6.
8. Minocha A, Rupp TH, Jaggers TL, Rahal PS. Silent colo-gastrocutaneous fistula as a complication of percutaneous endoscopic gastrostomy. Am J Gastroenterol. 1994 Dec;89(12):2243–4.
9. Strodel WE, Lemmer J, Eckhauser F, Botham M, Dent T. Early experience with endoscopic percutaneous gastrostomy. Arch Surg. 1983 Apr;118(4):449–53.
10. Marshall JB, Bodnarchuk G, Barthel JS. Early accidental dislodgement of PEG tubes. J Clin Gastroenterol. 1994 Apr;18(3):210–2.

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