Delayed Perforation of Gastrocolocutaneous Fistula after Percutaneous Gastrostomy

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ABSTRACT

Introduction: Percutaneous endoscopic gastrostomy (PEG) tube placement is generally a safe and effective method for establishing long-term enteral access in a minimally invasive fashion. Placement through an intervening loop of colon is a surgical pitfall that ultimately requires operative exploration to correct. Delayed perforation remote from the initial PEG placement is not yet described in the literature and represents an unusual but serious form of this complication.

Case Description: A 62-year-old male with history of Down syndrome and severe intellectual disability, chronic PEG, and tracheostomy developed free air during his admission. Subsequent exploratory laparotomy demonstrated that the PEG traversed the sigmoid colon and entered the gastric lumen, with a small perforation along the exit site of the sigmoid colon. Segmental colonic resection with end colostomy was performed without complication, and the gastrostomy was revised in a Stamm fashion. He was able to resume tube feeds prior to hospital discharge.

Conclusion: Intestinal perforation secondary to a misplaced PEG tube with gastrocolocutaneous fistula can occur in a delayed fashion, even long after the tube was placed and feeding was initiated. Utilization of the “safe tract” method must carefully be employed to minimize the risk of placement through an intervening hollow viscous such as colon or small bowel. Perforation or coloenteric fistulae require surgical intervention to correct.

Key Words: Gastrostomy, Cutaneous Fistula, Endoscopy.

INTRODUCTION

Percutaneous endoscopic gastrostomy (PEG) has become the procedure of choice for establishing long-term enteral feeding access since it was first introduced in 1980 by Gauderer and others. Largely, this is secondary to excellent efficacy (over 99% by meta-analysis) in conjunction with technical simplicity, ease of tube management, and low cost. In comparison to other techniques for placement of gastrostomy tubes, PEG has garnered the most favorable risk profile with fewer tube dislodgements than radiographically guided tubes.
and a subsequent colonic fistula forms. A handful of case reports exist describing this phenomenon.5–9 Often, this complication presents months after the initial PEG placement as recurrent emesis and frequent diarrhea, with potential for subacute febrile episodes.

Herein we present an as-of-yet undescribed case of delayed colonic perforation secondary to GCCF after PEG placement. We then review PEG tube complications and the literature surrounding presentation and management of GCCF.

**CASE REPORT**

The patient was a 62-year-old gentleman with history of developmental delay and prior PEG and tracheostomy placement who presented from a long-term care facility with tracheostomy complications. The patient had been tolerating tube feeds for several years via his PEG prior to presentation. On hospital day 2, the general surgery service was consulted for new-onset tachycardia. Abdominal plain films as well as an upright chest x-ray revealed a large volume of pneumoperitoneum (Figure 1). Given these findings, the patient was taken emergently to the operating room.

At exploratory laparotomy, a GCCF was noted almost immediately upon entering the abdomen. Examination of the fistula revealed a perforation of the sigmoid colon at the proximal aspect of the sigmoid colon as the PEG exited the anterior gastric wall and penetrated the colonic lumen (Figure 2). The fistula was completely taken down, a new gastrostomy tube was placed in a Stamm fashion, and a partial sigmoid colectomy with end colostomy was performed given his poor functional status/wound care needs. The patient tolerated this procedure well and was eventually discharged to his long-term care facility tolerating goal tube feeds.

**DISCUSSION**

With over 200,000 PEGs placed annually in the United States since the early 2000s,10 PEG tube placement has rapidly become the preferred method over radiologic and surgically placed g-tubes for securing durable access for enteral nutrition. Although generally considered to be a very safe procedure, multiple case series suggest that complications ranging in severity from minor to major (Table 1) occur at rates between 9% and 17%.11,12 GCCF,
whereby the gastrostomy tube is placed from the anterior abdominal wall, through the colon and into the stomach, is a known rare, but major, complication of PEG placement that is estimated to occur in 0.2%–0.76% of adult and 2%–3.5% of pediatric patients. GCCF can have devastating effects; however, the symptoms and time of presentation vary widely. Although colonic perforation with peritonitis in the immediate postoperative period has been described as a complication of PEG placement, in GCCF the fistulous tract, which adheres the anterior wall of the stomach to the colon and the colon to the abdominal wall, frequently prevents periprocedural leakage of intraluminal contents into the abdominal cavity. As a result, a malpositioned PEG tube can go unnoticed for weeks and even years. In fact, GCCF are often asymptomatic until the bumper of the feeding tube erodes from the lumen of the stomach into the colon, leaving a direct communication between the two hollow viscera by which gastric contents can directly enter the large bowel and vice versa. It is this communication that leads to the most common presentation of GCCF: profuse diarrhea with enteral feeds and feculent emesis. Other symptoms include weight loss, abdominal pain, intestinal obstruction, and difficulty in tube exchange. Although some patients will remain entirely asymptomatic until the bumper of the feeding tube erodes from the lumen of the stomach into the colon, leaving a direct communication between the two hollow viscera by which gastric contents can directly enter the large bowel, some patients may present with symptoms similar to those seen with a PEG tube. In complicated cases, such as patients with prior abdominal surgery with associated adhesive disease and distorted anatomy, one might consider performing simultaneous laparoscopy to help confirm that the needle is not introduced into the colon.

In cases where GCCF is suspected, diagnosis is best made by fistulogram with gastrografin contrast. Other imaging modalities that can be used as adjuncts include contrast tomography (CT) with water soluble contrast, barium enema, and direct visualization of the fistula via upper or lower endoscopy. In summary, although rare, GCCF after PEG placement can cause significant morbidity, including delayed bowel perforation and sepsis. Attention should be paid during PEG placement to minimize risk of instrumenting the colon and imaging should be conducted if there is any suspicion that the feeding tube is passing through the bowel. Treatment will depend on the patient’s symptoms but can range from nonoperative management, endoscopic fistulotomy, to exploratory surgery.
References: