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Complications of a Percutaneous Endoscopic Gastrostomy Tube Causing a Gastrocutaneous Fistula: A Case Report

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Abstract

Background: A 79-year-old female presented with fluid leakage from a previous percutaneous endoscopic gastrostomy tube site who was found to have gastrocutaneous fistula.

Summary: Our patient presented at the age of 79 with complaints of a fluid leakage outside of her abdomen. She had a previous Percutaneous Endoscopic Gastrostomy (PEG) tube placement incision. The PEG tube was later self removed and the patient tolerated oral intake. She underwent an esophagogastroduodenoscopy and gastrocutaneous fistula closure with an Ovesco Over-The-Scope-Clip. While uncommon, gastrocutaneous fistulas should be considered as a possible differential diagnosis in patients with fluid leakage from prior gastrostomy tube placements. The literature on gastrocutaneous fistula is reviewed.

Conclusion: Gastrocutaneous fistulas are an uncommon pathology but should be included in patients with presenting risk factors such as intrinsic intestinal disease, radiation enteritis, distal obstruction, abscess, peritonitis, or malnourishment. Gastrocutaneous fistulas are highly rare occurrences but should be considered in patients presenting with fluid leakage from prior gastrostomy tube sites.

***Keywords:** Percutaneous endoscopic gastrostomy; Gastrocutaneous; Fistula; Iatrogenic*

1. Introduction

Gastrocutaneous fistula (GCF) is an abnormal connection in the skin layer and gastrointestinal lining. A GCF is a highly rare complication accounting for only 0.5%-3.9% cases having undergone gastric surgery [1]. These fistulas mostly occur after breakdown of a gastroenteric anastomosis, disruption of the gastric suture lines (commonly after bariatric surgery conventional surgery), iatrogenic gastric injury (particularly after splenectomy), or failure in healing of a gastrostomy tube tract [2].

The general approach to closure of gastrocutaneous fistulas is to reduce fluid flow through the fistula. This approach can be achieved by using parenteral nutrition, though consideration may be made to enteral feeding if a tube can be passed distal to the fistula site. Studies have shown to lead to healing of fistulas of the gastrointestinal tract in 61% of patients occurring within 4-5 weeks [3].

We present a unique case of a gastrocutaneous fistula causing leakage from a previous percutaneous endoscopic gastrostomy (PEG) tube site. The aim of this case report is to clarify the entity of a gastrocutaneous fistula and discuss the various treatment strategies available. Currently, minimal literature has been reported or studied on gastrocutaneous fistulas making each case highly unique [4].

2. Case Description

We present a case of a 79 year old female with a past medical history of coronary artery disease, cerebrovascular accident, essential hypertension, dementia, and major depressive disorder who was brought to the emergency department due to persistent leakage from a previous PEG site. Her PEG tube was successfully inserted 4 years prior to admission. Currently, the tube was self-removed and the patient was tolerating oral intake, but continued to have leakage which prompted further evaluation. Current medications included Aspirin, Plavix, Pepcid, Lactulose, Lisinopril, Zocor, Effexor, Oscal, and Xalatan ophthalmic solution. Vitals upon admission were 98.4°F, HR 69, BP 147/ 64, RR 20, and O2 Sat of 98% on room air. She was a frail appearing woman in no acute distress. Physical exam was pertinent for the previous PEG site without erythema, warmth, or tenderness with minimal, odorless drainage. The rest of her exam was within normal limits. Pertinent lab findings included K 4.9, Cl 104, HCO3 27 and glucose 148. Images from CT- Fistulogram displayed contrast extending from the skin surface through the mid anterior wall to the stomach, consistent with a GCF (FIG. 1).

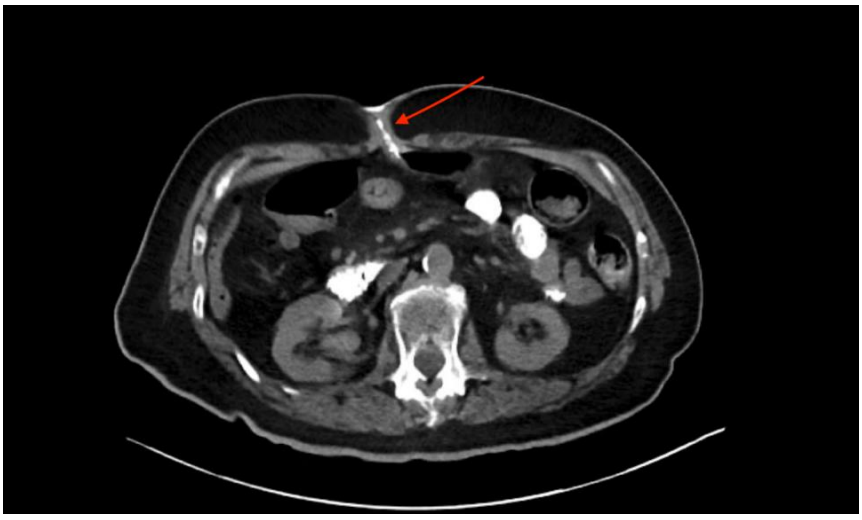

FIG. 1. **CT- Fistulogram displaying contrast extending from the skin surface through the mid anterior wall to the stomach, consistent with a GCF.**

She underwent EGD for further evaluation and had a GCF closure with an Overesco Over- The- Scope Clip. The skin around the fistula site was prepped with topical antiseptic in a sterile fashion.

Local anesthesia (10 mL 1% xylocaine) using a 25-gauge needle was administered and the needle was advanced vertically into the stomach with endoscopic guidance.

1% xylocaine was administered during needle withdraw at 0.5 mL - 1 mL aliquot within the needle path after each intermittent negative pressure test. The EndoClose™ was advanced with trocar site closure device with a surgical suture thread following the prior needle path into the stomach. The suture was grasped with an endoscopic forceps and the EndoClose device was removed. The EndoClose device was advanced at the other side of the fistula opening into the stomach after local anesthetic administration.

The notched stylet tip of the device was used to secure the suture inside the stomach and to bring it outside the stomach. This ensured that the first pair of trans-abdominal sutures were placed. It is recommended to place 2-3 pairs for optimal fistula closure.

3. Discussion

Gastrocutaneous Fistulas (GCF) are defined by their relative underlying etiologic factors. It is understood that vascular necrosis is the basis of causing disrupted gastric suture lines due to iatrogenic gastric injury or manipulation that causes GCF [1]. For example, data collected from a gastrostomy placement study found that there is a frequency of 4.5% of GCF formation and may persist for up to three months till closure. Given this statistic, GCF formation is also related to a higher than normal change of infection and adverse effect at 12.2% [5]. Other studies have claimed even higher percentages ranging from 16%-45% [6]. It is agreeable from this information that proper diagnosis and treatment of GCF is of paramount importance to reduce patient mortality.

Approximately 200,000 to 250,000 PEG tube placements are performed annually in the US. Reported complications from this procedure vary from 16% to 70%. Complications include tube dysfunction, infection, bleeding, periostomal leakage, gastric outlet obstruction, ulceration, and leakage of gastric contents into the peritoneal cavity. Early complications include pneumoperitoneum, ileus, perforation of the esophagus or stomach, whereas late complications include deterioration of the gastrostomy site, buried bumper syndrome, colocutaneous fistula, or PEG tract tumor seeding.

Predisposing factors to GCF formation is intrinsic intestinal disease, radiation enteritis, distal obstruction, or a hostile abdominal environment including abscess formation or peritonitis. Risks are also increased when patients are malnourished so we suggest nutritional correction with in-patient dieticians to be beneficial for appropriate GCF management.

The rate of gastrocutaneous fistula following operations for nonmalignant processes such as ulcer disease, reflux disease, and obesity is between 0.5%-3.9%. The recent rapid increase in the number of bariatric surgical procedures was anticipated to lead to an increase in the incidence of gastrocutaneous fistula following surgery for benign disease.

One study has reported that approximately 10% of patients with staple line leaks go on to form chronic fistulas, making the overall rate less than 0.5%.

In gastrocutaneous fistulas, the output is high, and the fluid loss, electrolyte imbalance, and malabsorption can be profound. Significant electrolyte imbalance occurs in 45% of patients, and malnutrition occurs in 55% to 90%. Skin and wound complications develop as a result of contact of GI effluent with skin or the wound.

Diagnosis involves a variety of imaging modalities in a suspected patient. Clinical judgement should be used to decide between the best course of action for the patient. Upper and lower endoscopy can provide direct visualization of the GCF. GI endoscopy allows direct visualization of gastric mucosa.

Barium studies can be utilized to enhance areas of fistula formation. If abscessed areas are suspected then ultrasound or CT scan can provide useful information. CT can not only help delineate the anatomy of the fistula but also demonstrate associated intra-abdominal abscesses, fluid collections, or areas of distal intestinal obstruction and presence of intrinsic intestinal disease.

Another alternative includes utilizing a fistulogram with contrast dye over the external skin and x-ray imaging can prove to be useful for the patient.

Surgical closure of GCF should be considered to reduce the percentage of further complications as mentioned above. It is found that full thickness suturing with assisted endoscopic visualization is a useful technique. This approach requires angiocatheter manipulation to allow for suture delivery [4]. If patients do not meet criteria for invasive procedures then minimally invasive options are also available and should be considered. Endoscopic cautery, clip closure, endoscopic suturing, endoscopic assisted closure with a porcine fistula plug, endoscopic fibrin sealant injection with application of a haemostatic clip, or fibrin glue therapy for tract sclerosis have been utilized to treat GCF with success [5].

4. Conclusion

Here we present an atypical presentation of a gastrocutaneous fistula formed from a previous percutaneous endoscopic gastrostomy (PEG) tube site. In the setting of fluid leakage from any cutaneous site with a prior history of gastrostomy tube insertion the evaluation for gastrocutaneous fistulas should be considered. Our efforts to contribute to previous medical literature on the diagnosis and management of gastrocutaneous fistula. Furthermore, we aim to contribute our findings to determine future optimal therapies in efforts to prevent the formation of these rare types of fistulas that may later progress to complications such as pneumoperitoneum, illeus, infections, and esophageal or stomach perforations.

Establishing clinical protocols or guidelines may overall decrease mortality and morbidity risks in these types of patients. With respect to surgical medicine, healthcare providers should obtain a detailed physical exam and a thorough patient history on prior gastrostomy tubes placements or any other forms of tube placements. Healthcare providers should include in their differential diagnosis the possibility of a gastrocutaneous fistula.

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