

Percutaneous Endoscopic Gastrostomy Tube Placement for End-stage Palliation of Malignant Gastrointestinal Obstructions

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ABSTRACT

Background/Aim: Decompression of malignant gastrointestinal obstructions is an uncommon indication for percutaneous endoscopic gastrostomy (PEG) tubes. The purpose of this study is to determine the efficacy of venting PEG tubes in relieving nausea and vomiting and assessing complications associated with tube placement. **Patients and Methods:** This study is a retrospective chart review of patients with PEG tubes placed to decompress malignant gastrointestinal obstructions between January 2005 and September 2010 by the gastroenterology service at our institute. Patient demographics, symptom relief, procedural complications, diet tolerability and home palliation were reviewed. **Results:** Seven PEG tubes were inserted to decompress malignant gastrointestinal obstructions. The mean patient age was 62 years (range 37-82 years). The underlying primary malignancies were small intestine (1), appendiceal (1), pancreatic (2), and colon (3) cancer. Gastric outlet obstruction was present in 3 (43%) patients while small bowel obstruction occurred in 4 (57%) patients. There was relief of nausea and vomiting in 6 (86%) patients. Procedural complications were present in 1 (14%) patient and involved superficial cellulitis followed by peristomal leakage. Patients with gastric outlet obstruction continued to have limited oral intake while patients with small bowel obstruction tolerated varying degrees of oral nutrition. Six (86%) patients were discharged home after PEG tube placement, but only 2 (33%) were able to undergo end-stage palliation at home without re-admission for hospital palliation. **Conclusions:** Venting PEG tubes significantly reduce the symptoms of nausea and vomiting in patients with metastatic gastrointestinal obstruction due to primary gastrointestinal malignancies. Complications associated with tube placement were minimal.

Key Words: Gastrointestinal obstruction, gastrostomy, malignancy, palliation

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Percutaneous endoscopic gastrostomy (PEG) tubes have been used for a broad range of conditions ranging from neurological disorders to head and neck cancers in order to supply enteral alimentation since first being described by Gauderer and Ponsky in 1980.^[1,2] A less common indication for PEG tubes is to decompress the gastrointestinal tract in benign and malignant diseases.^[3]

Malignant gastric outlet and small bowel obstruction from primary or metastatic disease may occur with advanced malignancies. Patient prognosis is ominous if this occurs with

metastatic disease and end stage palliation is usually sought as the risk of surgery generally outweighs the benefit.^[4,5]

The symptoms of malignant gastrointestinal obstruction are pathophysiologically due to a combination of mechanical impedance, motility dysfunction, aggregation of secretions, diminished intestinal absorption, and inflammation.^[6] These factors lead to significant nausea, vomiting, and abdominal pain. Medical therapy, including antiemetics, corticosteroids, anticholinergics, and somatostatin analogs for nausea and vomiting in combination with narcotics for abdominal pain, may be of limited benefit.^[7,8] Placement of venting PEG tubes can be used for gastrointestinal decompression, allowing end-stage palliation.

The use of venting PEG tubes has mainly been reported in malignant bowel obstructions from advanced gynecological malignancies, with relief of nausea and vomiting in this patient population.^[9-12] There is little literature supporting

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the use of venting PEG tubes in metastatic gastrointestinal obstruction for primary gastrointestinal malignancies. We report our results for palliative venting PEG tube placement in patients with metastatic gastric outlet and small bowel obstruction from primary gastrointestinal cancers.

PATIENTS AND METHODS

The charts of all patients that had PEG tubes placed at London Health Sciences Centre in London, Ontario, Canada by the gastroenterology service between January 2005 and September 2010 were identified by a search of billing codes and retrospectively reviewed. Data from the charts of patients who had PEG tubes inserted to decompress malignant gastrointestinal obstructions were extracted, including patient demographics, type of cancer, symptoms, procedural complications, relief of symptoms, diet tolerability, and successful home palliation.

This patient population consisted of patients with primary gastrointestinal cancer that had metastasized within the gastrointestinal tract. Patients were not surgical candidates due to incurable cancer with extensive metastasis and morbidity. Patients presented to hospital with intractable nausea and vomiting associated with abdominal pain. They were found to either have small bowel obstruction secondary to peritoneal carcinomatosis or gastric outlet obstruction on radiological imaging or endoscopy. Medical therapy was tried unsuccessfully prior to consideration for venting PEG. PEG tubes were placed for end stage palliation of the symptoms of nausea and vomiting caused by the malignant obstruction.

Procedures were performed under conscious sedation with midazolam and fentanyl, with a gastroenterology fellow assisting. A prophylactic dose of antibiotics was administered to patients that were not already on antibiotics for other reasons. Patients were placed in the left lateral decubitus position and oral suction was provided to limit oral secretions and minimize the risk of aspiration. A standard video gastroscope was inserted into the oropharynx down the esophagus into the stomach and advanced to the duodenal bulb if possible. The gastroscope was generally used to

suction out fluid residuals seen prior to tube placement if present while a nasogastric tube was used to remove residuals in one patient in order to further reduce the risk of aspiration. The stomach was transilluminated. Finger pressure was applied to localize the insertion point and the area was then marked. This area was then cleaned with chlorhexidine, sterile drapes were applied, and xylocaine was injected at the site and penetrated the stomach wall. A small incision was made in the skin and a guidewire was then introduced through a trochar into the stomach, which was pulled up to the oropharynx using the snare on the scope. A 24 French PEG tube was then attached and using the pull technique, was properly positioned and secured. The PEG tube was used for venting afterwards whenever necessary. Patients were instructed on how to vent the tube by attaching a syringe with applied negative pressure or the tube was connected to a negative suction apparatus in some scenarios when symptoms of nausea and vomiting developed. The PEG tube was clamped during feeds in patients that were still eating orally.

RESULTS

Palliative venting PEG tubes for malignant gastrointestinal obstruction were the indication in 7 (6%) of 113 PEG tubes inserted during our study period. The mean age of patients with palliative venting PEG tubes was 62 years (range 37-82 years) with the patient population consisting 3 males and 4 females [Table 1]. The primary malignancies were only gastrointestinal and consisted of ileal adenocarcinoma (1), appendiceal goblet cell carcinoma (1), pancreatic adenocarcinoma (2), and colon adenocarcinoma (3). Patients were diagnosed with stage IV cancer on presentation in 4 (57%) cases while resected cancer with metastatic recurrence occurred in 3 (43%) cases. The average duration from diagnosis with primary malignancy to PEG tube placement was 27 months (range 7-74 months).

Patients underwent at least one laparotomy in the course of cancer treatment in 6 (86%) cases prior to PEG tube insertion. Adjuvant chemotherapy was used in 5 (71%) cases while radiation therapy was used in 2 (29%) cases. None of

Table 1: Patient demographics and outcomes (n=7)

Age	Sex	Primary cancer	Malignant obstruction	Symptom relief	Intake	Complications	Home palliation
82	F	Colon	Small bowel	Yes	Fluid	No	No
60	F	Pancreas	Gastric outlet	Yes	Fluid	No	No
69	F	Colon	Small bowel	Yes	Food	Yes	No
76	M	Colon	Small bowel	Yes	Food	No	No
61	M	Pancreas	Gastric outlet	Yes	None	No	Yes
37	M	Ileum	Gastric outlet	Yes	None	No	Yes
47	F	Appendix	Small bowel	No	Food	No	No

F: Female, M: Male

the patients underwent any further surgery, chemotherapy, or radiation therapy after insertion of a venting PEG. All patients had extensive intra-abdominal metastatic disease on computed tomography scan prior to PEG tube placement. Mild to moderate ascites was present in 5 (71%) cases, but none of the patients required a paracentesis prior to PEG tube placement. The gastrointestinal obstruction caused by the malignancy was gastric outlet obstruction in 3 (43%) cases, which was due to extrinsic compression and peritoneal carcinomatosis leading to recurrent small bowel obstruction in 4 (57%) cases. On endoscopy all patients with gastric outlet obstruction had significant gastric residuals while this was only found in one patient with small bowel obstruction. Gastritis was diagnosed in 1 patient while esophagitis was seen in 2 other patients. Proton pump inhibitors were prescribed to these patients for additional symptom control and to prevent bleeding complications.

There was relief of nausea and vomiting in 6 (86%) patients on the first day after PEG tube insertion, which persisted throughout hospitalization. Oral intake was limited in patients with gastric outlet obstruction. Patients with small bowel obstruction from peritoneal carcinomatosis tolerated oral intake to varying degrees from sips of liquids to a full diet. The PEG tube was clamped during feeds in these patients. None of the patients received total parenteral nutrition, but patients without any oral intake were hydrated with intravenous fluids [Table 1]. Complications were delayed and occurred in 1 (14%) patient, which included superficial cellulitis followed by peristomal leakage of ascitic fluid from the PEG site. The PEG tube was removed in this case 11 months after insertion and replaced by a foley catheter used for decompression.

Patients were discharged home in 6 (86%) of the cases after PEG tube insertion. The mean PEG tube insertion to discharge time was 7 days (range 2-18 days). Patients successfully underwent palliation at home in 2 (33%) cases with 4 (67%) patients requiring re-admission for end stage palliation in hospital. The average length of time spent at home prior to readmission for in-hospital palliation was 126 days (range 7-467 days). Patients that were discharged home generally did well with the assistance of home nursing and palliative services. Failure at home usually occurred only a few days prior to readmission. Inability to further tolerate palliation at home was due to weakness, dehydration, pain management, or dyspnea secondary to pleural effusions. The mean survival after PEG tube insertion was 119 days (range 6-484 days).

DISCUSSION

The benefit of venting PEG tubes in decompressing malignant bowel obstructions in advanced gynecological malignancies

has been well established.^[9-12] Studies looking at the use of PEG tubes in advanced gastrointestinal malignancies to decompress the gastrointestinal tract are limited and have been done in combination with gynecological malignancies, but have also shown utility.^[13,14] Our small study solely looked at patients with metastatic gastric outlet or small bowel obstruction from a primary gastrointestinal malignancy for which a PEG tube was placed due to refractory nausea and vomiting as end-stage palliation.

There was relief of nausea and vomiting in 6 (86%) patients after venting PEG tube insertion. Even in the single patient with peritoneal carcinomatosis who did not have relief of nausea and vomiting, there was still an improvement in her symptoms after the procedure. Our results are consistent with prior studies in regards to relief of nausea and vomiting.^[9-14] PEG tube placement is not contraindicated in this group as long as the stomach can be visibly transilluminated, mobilized to external pressure, and the insertion point is not too low or high riding in the abdomen to minimize the risk of perforating bowel hidden between the stomach and abdominal wall.

No benefit has been shown in reducing incidents of tube blockage with larger diameter PEG tubes.^[15,16] The diameter of PEG tubes used at our institute was 24 French. All 5 (71%) patients with ascites did not undergo paracentesis prior to endoscopy, but this did not affect PEG tube placement. This is consistent with past studies showing that ascites is not an absolute contraindication for PEG tube placement.^[9,11]

Complications encountered were delayed and occurred in one patient. This involved superficial cellulitis followed by peristomal leakage of ascitic fluid 11 months after tube insertion. The patient was treated with antibiotics and the PEG tube was removed. A foley catheter was used to plug the tract and decompress the obstruction with good results. Paracentesis performed prior to PEG tube insertion and at intervals after the procedure may minimize the potential complication of peristomal ascitic fluid leakage. Overall, complication rates were consistent with other studies where PEG tubes were placed for venting as well as other indications.^[9-14,17]

After PEG tube placement, the diet tolerability of patients with gastric outlet obstruction was still limited likely due to the location of the obstruction leading to early satiety. Tolerability ranged from sips of fluid to a full diet in patients with small bowel obstruction, which was an improvement from prior to PEG tube placement. These results are similar to prior studies.^[9-14]

Venting PEG tubes allowed 6 (86%) patients to be discharged home, which permitted patients to spend most of their final

days at home. Successful home palliation occurred in 2 (33%) cases while 4 (67%) patients were readmitted shortly before death because of inability to manage at home. The mean length of time patients spent at home prior to readmission was 126 days while survival after PEG tube insertion was 128 days. However, the majority of patients requiring readmission would die within 2 to 4 weeks of insertion of venting PEG. One patient was able to spend 467 days at home and survived 484 days.

CONCLUSION

Venting PEG tubes are an effective palliative treatment for refractory nausea and vomiting caused by malignant gastric outlet obstruction or small bowel obstruction from a gastrointestinal primary malignancy. They allow patients to spend most of their final days at home, which is extremely valuable to both patients and their families.

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