GHAPP

Gastroenterology & Hepatology
Advanced Practice Providers

2020 Third Annual National Conference

November 19-21, 2020

Red Rock Hotel – Las Vegas, NV

Annenberg Center For Health Sciences at Eisenhower
Imparting knowledge. Improving patient care.

Jointly provided by the Annenberg Center for Health Sciences at Eisenhower and Gastroenterology and Hepatology Advanced Practice Providers.

GHAPP
Gastroenterology & Hepatology Advanced Practice Providers

GHAPP
Gastroenterology & Hepatology
Advanced Practice Providers

Percutaneous Gastrostomy Tubes

Prevention and Management of Complications

Gail Pearson, MSN, FNP-C

South Denver Gastroenterology

Disclosures

All faculty and staff involved in the planning or presentation of continuing education activities provided by the Annenberg Center for Health Sciences at Eisenhower (ACHS) are required to disclose to the audience any real or apparent commercial financial affiliations related to the content of the presentation or enduring material. Full disclosure of all commercial relationships must be made in writing to the audience prior to the activity. Staff at the Annenberg Center for Health Sciences at Eisenhower and Gastroenterology and Hepatology Advanced Practice Providers have no relationships to disclose.

Disclosures

Gail Pearson, MSN, FNP-C

Speakers Bureau: Salix, Clinical Area- IBS-D and HE

Educational Objectives

After attending this activity, participants should be able to:

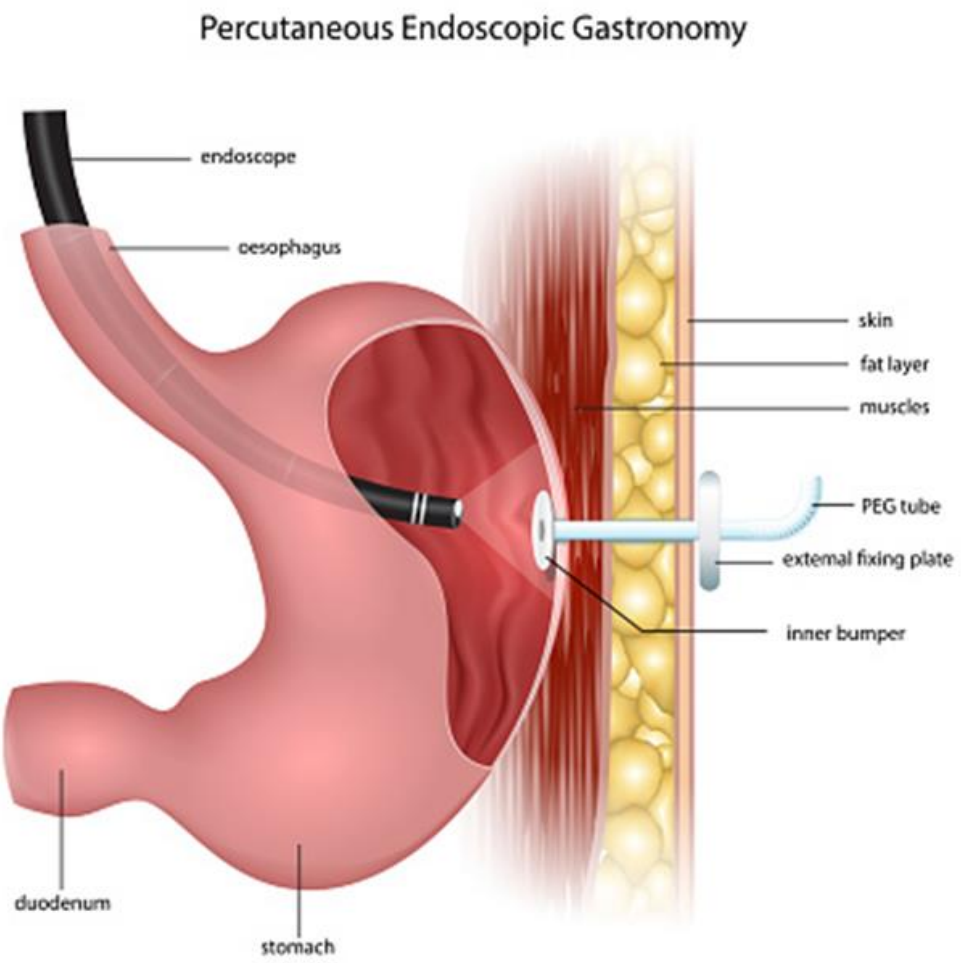
- Identify indications and contraindications for percutaneous endoscopic gastrostomy (PEG)
- Identify potential complications
- Identify strategies for management and avoidance of complications
- Analyze clinical cases to improve diagnostic and treatment skills

PEG Tubes

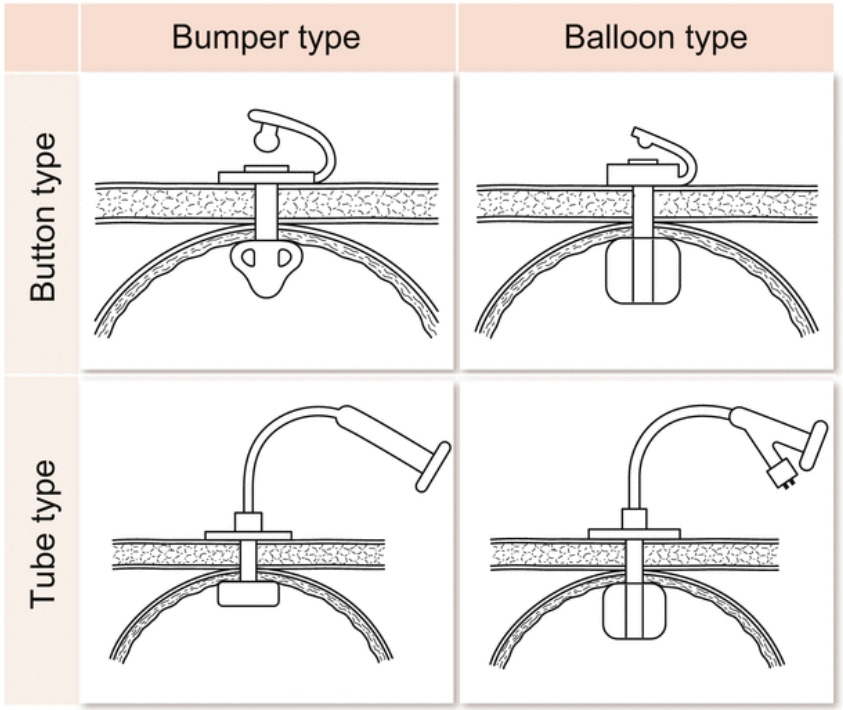
- First used in 1980 in pediatric patients
- Modality of choice for long-term enteral nutrition
- Generally safe
- Can be associated with potential complications
- Based on Medicare claims data, PEG tube placement has increased over the years

Duszak, Mabry. *J Vasc Interv Radiol.* 2003.

PEG


Percutaneous Endoscopic Gastronomy
endoscope
oesophagus
skin
fat layer
muscles
PEG tube
external fixing plate
inner bumper
duodenum
stomach

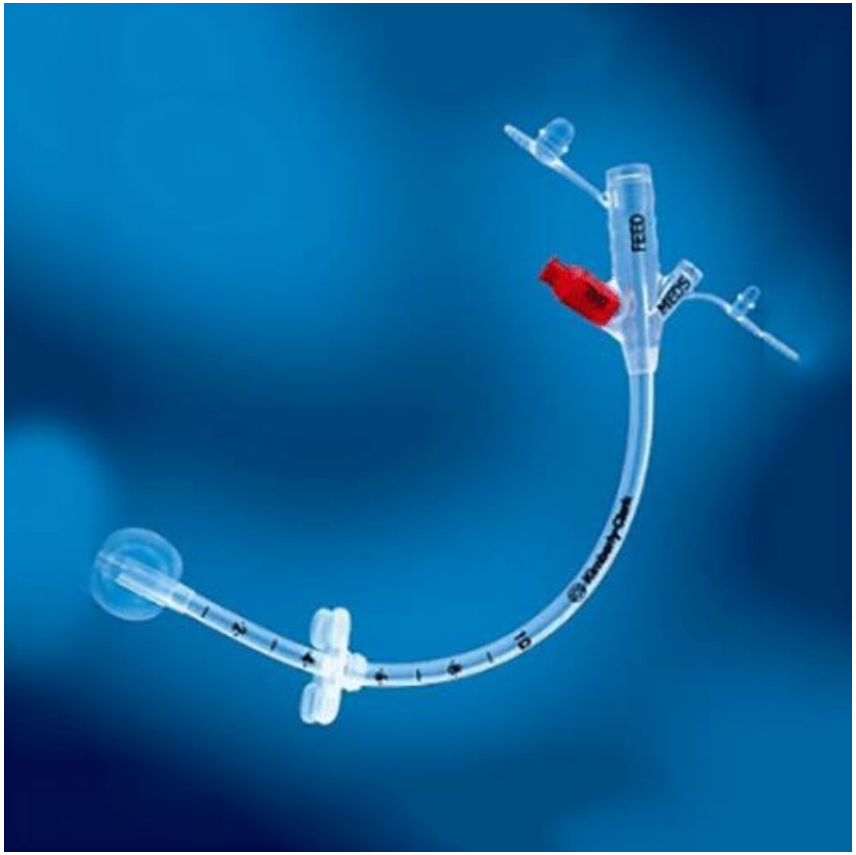
Bumper or Balloon?



- Balloon – look for the inflation port
- Balloon replaced easily
- Easy removal with balloon
- Inadvertent removal higher with balloon

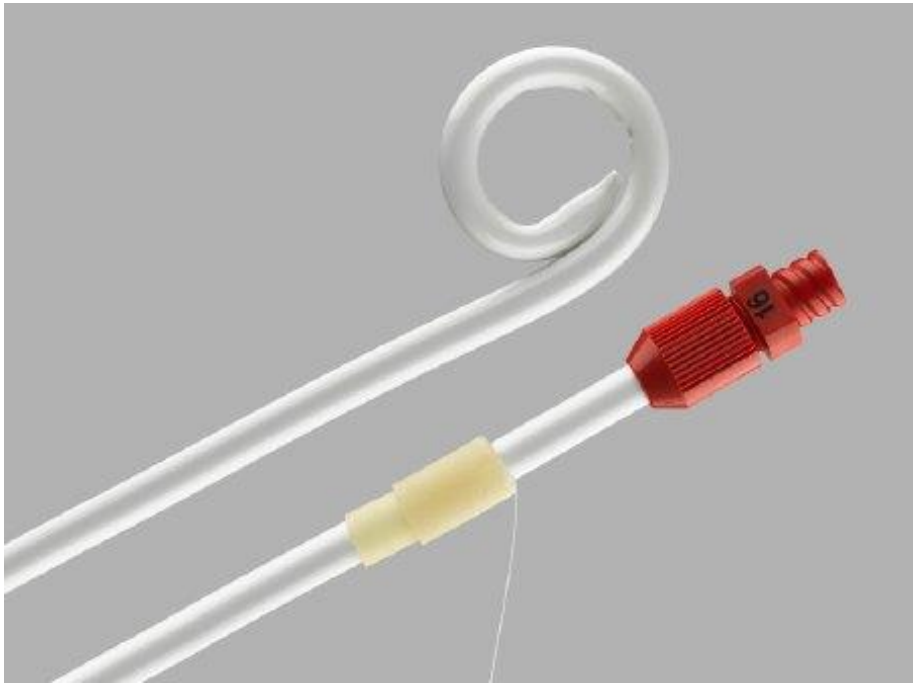
PEG With Bumper

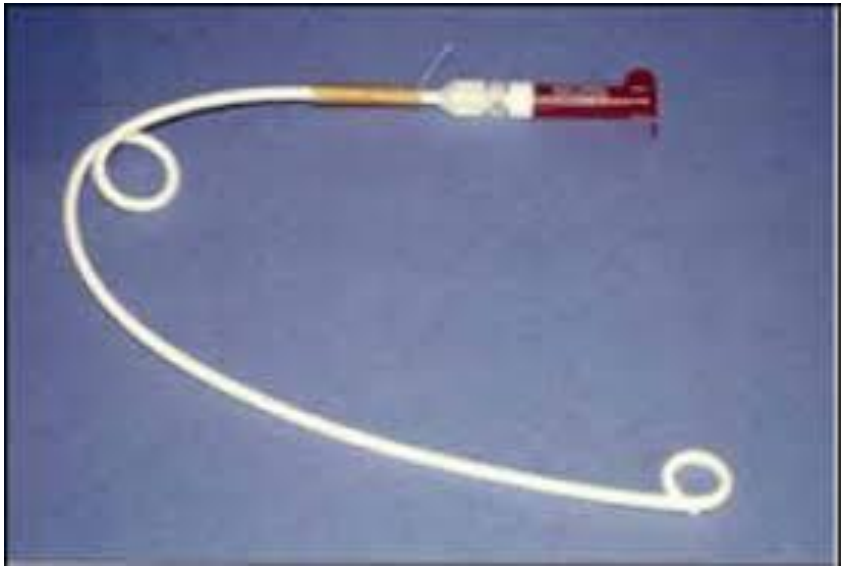
PEG With Balloon



- Initially placed by IR
- Replacement tube
- May be replaced in clinic setting

Pigtail PEG



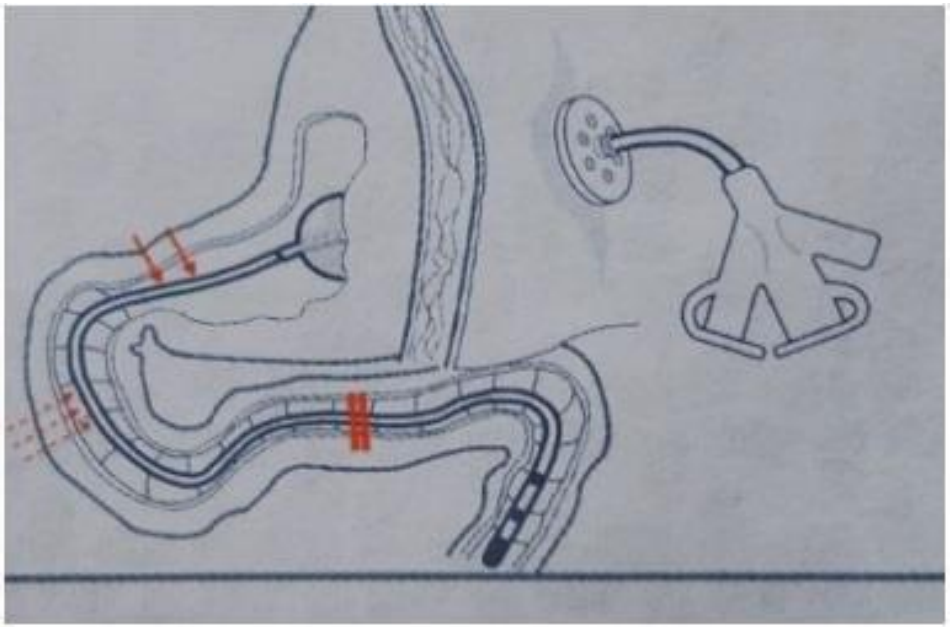


Two Main Indications

- Feeding Access
  - Temporary or chronic neurologic disorders/dysfunction
  - Traumatic brain, spinal injuries or polytrauma
  - Cerebrovascular disease
  - Prolonged coma
  - Head, neck and esophageal cancer
  - Neurologic diseases
  - Facial surgery
- Gastric Decompression
  - Chronic ileus/obstruction
  - Severe dysmotility

GJ Tube

- Patients at risk of aspiration
- SMA syndrome
- Regurgitation/Emesis



Contraindications

- Serious coagulation disorders
- Hemodynamic instability
- Peritonitis
- Severe ascites
- Abdominal wall infection
- Marked peritoneal carcinomatosis
- Interposed organs
- History of gastric surgery
- Severe gastroparesis (if being used for feeding)
- Gastric outlet obstruction (if being used for feeding)
- Lack of informed consent

Rahnemai-Azar et al. *World J Gastroenterol.* 2014.

Contraindications

- Dementia
  - A leading cause of death in the US
  - Mortality affected by aspiration, hydration and nutritional status
  - No studies showed definitive evidence to suggest long-term survival rates improved in patients who underwent PEG placement as compared to those who did not

Goldberg, LS, Altman KW. *Clin Intervent in Aging.* 2014.

Complication Rates

- Minor complications range from 13% to 40%
  - ~ 4% major complications
  - – Carefully select patients
- Complication rates about the same for endoscopically compared to fluoroscopic placement
- 2013 retrospective study using US NIS analyzed data from 2006 – in-hospital mortality was 10.8% among 181,196 patient who underwent PEG

Blumenstein I et al. *World J Gastroenterol.* 2014; Arora G et al. *Clin Gastroenterol and Hepatol.* 2013.

Early PEG Procedure Related Complications

- Complications of upper endoscopy and sedation
- Benign pneumoperitoneum – usually self-limited
- Perforation – damage to internal organs
- Aspiration
- Hemorrhage/bleeding

Pneumoperitoneum

- Common finding after PEG insertion
- As high as 50% in some studies
- Not generally considered a complication
- Related to air insufflation associated with the endoscopic procedure
- In absence of peritoneal signs should not prevent use
- Potential for bowel injury should be considered when free air persists 72 hr post-PEG insertion

Schrag et al. *J Gastrointest Liver Dis.* 2007.

Perforation/Internal Organ Injury

- Colon, small bowel, liver and spleen at risk
- Diagnosis can be challenging since many PEG candidates may not be able to communicate symptoms
- Watchful follow-up
- Plain films have limited utility
- CT for clinical concerns

Williams E et al. *Gastrointest Endosc.* 2003.

Perforation/Internal Organ Injury

- Colonic injury
  - Transverse colon displacement
  - Usually present with peritonitis
  - Surgery often required
- Small bowel injury
  - Rare and difficult to diagnose
- Gastro-colo-cutaneous fistula
  - Interposition of bowel between anterior abdominal wall and gastric wall
- Liver injury

The Tube Went Through What?

- 36 yo female with TBI
- Hematoma after removal
- Careful assessment prior to removal
- Endoscopic removal preferred

Aspiration

- Upper endoscopy is associated with a risk of aspiration
- Small risk with procedure
- Pilot study of 50 patients – no evidence of pulmonary aspiration
- Aspiration pneumonia risk with tube feeding

Thompson, A et al. *Can J Gastroenterol.* 2007.

Hemorrhage

- Rare following PEG placement
- Most controlled by pressure over the abdominal wound
- Endoscopy should be performed if significant bleeding
- May originate from the tract or from gastric ulceration
- Gastric wall and rectus sheath hematomas, retroperitoneal hemorrhage, gastric or superior mesenteric artery perforation
- Appropriate holding of anticoagulation agents
- SSRI use has been linked to bleeding

Richter, J. et al. *Gastrointest Endosc.* 2011.

Case Presentation

- DB 17 yo cervical spine injury resulting in incomplete tetraplegia
- PEG placed 5/14/20 – stomach reported normal
- 5/18/20 UGI bleed – required 3 u PC
- EGD performed X 3 – large clot in stomach unable to be removed – no active bleeding visualized

Case Presentation

- EGD 2 weeks later – normal appearing PEG
- Suspected bleeding occurred from vessel at PEG site

Abdominal Wall Bleeding

- Usually soon after placement
- Puncture of an abdominal wall vessel
- Tighten external bolster
- Release within 48 hours
- Abdominal wall binder

Later Complications

- Bleeding
- Aspiration pneumonia
- Injury to internal organs
- Necrotizing fasciitis
- Buried bumper
- Tumor or viral seeding at stoma

Gastrointestinal bleeding

- Hematemesis
- Melena
- Coffee ground aspirate
- Laboratory abnormalities
- Causes: esophagitis, gastric pressure ulcers and concomitant PUD

Case Presentation

- 53 yo male C3-4 injury from MVA
- PEG placed for feeding access
- 5 weeks after placement nursing reported coffee ground appearing material in gastric aspirate – later developed melena – no NSAIDs
- H/H 10.2/33.4 (12.6/36.3) BUN 32 (22)
- EGD performed

Gastric Ulcer From the Pressure of PEG

- Ulcer at PEG site
- PEG exchanged to balloon tube
- BID PPI
- Repeat EGD 6 weeks later – ulcer healed

Aspiration Pneumonia

- Few at PEG placement – majority occur later
- Neurological diseases/TBI
- Avoid supine position
- Check gastric residuals
- G/J for those at highest risk

Necrotizing Fasciitis

- Rare but potentially fatal complication
- Rapid spreading infection
- Diabetes, wound infections, malnutrition and impaired immunity
- Traction, pressure and dislodged tube risk factors
- Erythema, tenderness, discharge, crepitus
- Treatment – immediate
  - Surgical debridement
  - Broad-spectrum antibiotics
  - Intensive care support

Schrag,et al. *J Gastrointest Liver Dis.* 2007.

Buried Bumper

- Can occur early or late
- Serious complication occurring 1.5-1.9%
- Bumper lodged anywhere between gastric wall and skin
- Excessive tension
- Inadvertent tension

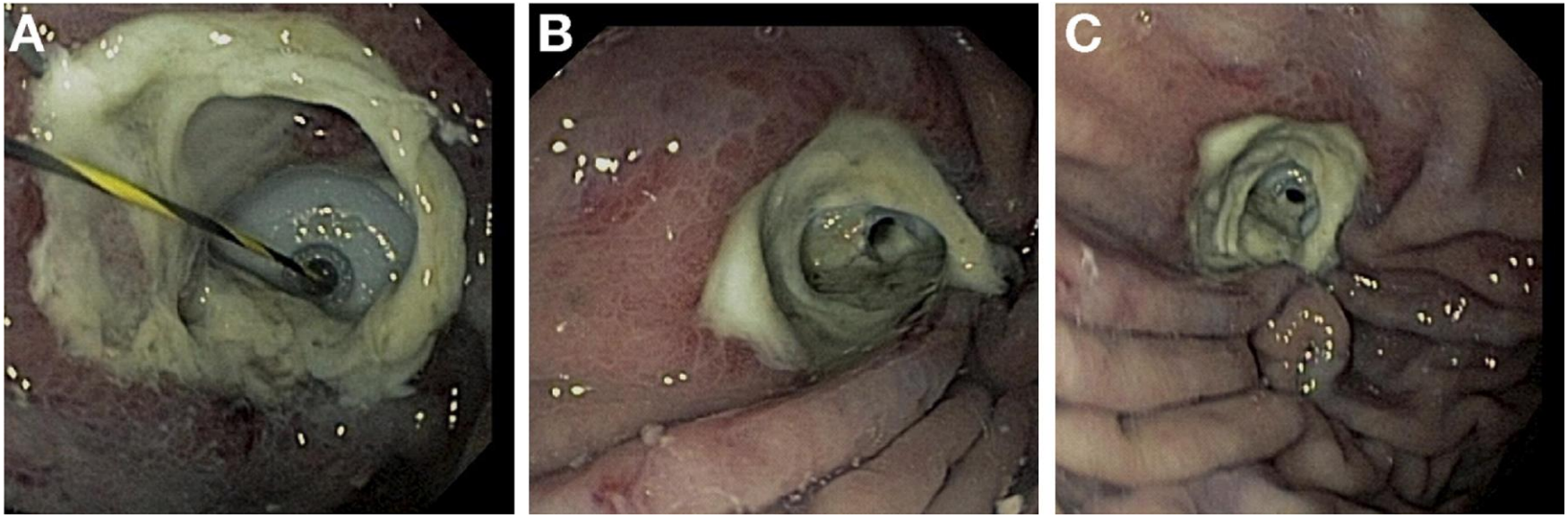
Schrag et al. *J Gastro Liver Dis.* 2007.

Case Presentation

- JM – 37 yo C4 spinal cord injury – incomplete tetraplegia
- 3 weeks post insertion – sluggish – would not flush or infuse, erythema and small amount of discharge, temp 104.2
- Labs: WBC 15, CRP 61
- CT – GT in abdominal wall with fluid collection

Buried Bumper

Buried Bumper



Clin Gastroenterol Hepatol. 2013 11DOI: 10.1016/j.cgh.2012.08.008.

Case Study

- GT replaced by IR over guidewire
- Drain placed into fluid collection
- Antibiotics

Tumor or Viral Seeding

- Stomal site metastasis – tumor seeding of the PEG tract
- Viral seeding
- Alternate placement
- Exclude viral infections in patients with oropharyngeal and/or esophageal symptoms

Huang A et al. *J Otolaryngol Head Neck Surg*. 2013; Saleem A et al. *Clin Gastroenterol Hepatol*. 2010.

Viral Seeding From Oral Herpes

Minor Complications

- Wound infection
- Hyper-granulation
- Leakage at stoma
- Dislodged tube
- Gastric outlet obstruction
- Clogged tube

Wound Infection

- Most common of minor complications
- Erythema – especially with extension, purulent discharge, signs of systemic inflammation
- Cultures limited value
- Prophylactic antibiotics reduce risk of infection
- If diagnosed early and mild – oral broad-spectrum antibiotics – local care
- If systemic signs IV antibiotics required

Hyper-Granulation

- Exact mechanism not known
- Suspected: friction, moisture
- Not life-threatening – uncomfortable and infection prone
- Wide variety of treatments
  - Topical antimicrobial agents
  - Silver nitrate
  - Steroid – triamcinolone 0.5% or clobetasol 0.05% 1-2 X daily for 7 days

Case Presentation

- 43 yo oral/facial injuries PEG placed 3 months prior
- Presented with drainage, pain, redness at site
- Securing PEG by hanging the end in necklace
- ~ 1.5 cm diameter

Case Presentation

- Clobetasol oint 0.05% applied BID X 1 week
- F/U hyper-granulation markedly decreased
- G Tube Holder

Gastrostomy Tube Holder

- Available from various online providers

Peristomal Leakage

- 1-2% reported – probably more common
- Can be associated with factors that hinder wound healing (diabetes, malnutrition, infection, gastric hypersecretion, excessive cleansing with hydrogen peroxide, side torsion on the PEG tube
- Barrier skin protectant
- Avoid replacing the tube with a larger one – may cause the tract to continue to enlarge

Peristomal Leakage

- Antisecretory therapy to reduce gastric acid
- If leakage persists, the tube can be removed for 24-48 hr and replace through the same site if mature site
- If these measures fail – remove and replace PEG at another site

Schrag et al. *J Gastrointest Liver Dis.* 2007.

Dislodged Tube

- Inadvertent PEG removal occurs frequently
- If this occurs less than one month after placement – replace with endoscopy or by IR
- Avoid blind reinsertion – stomach may have separated from the anterior abdominal wall resulting in perforation
- Surgery consult if s/sx of peritonitis/ sepsis present

Dislodged Tube

- If a mature tract
  - Verify position by aspiration
  - If there is any doubt water-soluble contrast study to confirm placement prior to restarting feeding
  - Binder may protect from inadvertent removal

Gastric Outlet Obstruction

- If external bumper slides forward the PEG bumper can migrate to the pyloric area resulting in gastric outlet obstruction
- Abdominal cramping, nausea and vomiting
- Maintain the position of the external bumper 1-2 cm from the skin

Clogged PEG

- Occurs in up to 45% of patients
- Prevention is key
- Flush 30-60 ml of water every 4-6 hours, after residual checks and after administering medication
- Dissolve medications completely or liquid forms

Schrag et al. *J Gastrointest Liver Dis.* 2007.

Clogged PEG

- Flush with warm water
- Carbonated beverages
- For formula clogs
  - Viokase 10,440 units lipase and one 325 mg sodium bicarb tab crushed and mixed in 5 ml of water. Introduce into the tube, clamp and wait 30 min before trying to flush
- Clog Zapper™
- Bionix® DeClogger – thin, flexible, polypropylene rod
- Bard PEG cleaning brush

Care After PEG Placement

- Studies have suggested that early feeding (~ 4 hours after placement) may be as safe as later feeding
- External bolster in proper position
  - At 7 days should be 1-2 cm in and out movement
- Cleanse daily with soap and water
  - Gauze not needed if no drainage
- Gastrostomy tube should be pushed forward and rotated during daily care

Bechtold M et al. *Am J Gastroenterol*. 2008.

Removal

- Depends upon the type – if type can’t be determined endoscopy to determine what type of internal bolster is present
- Determine if the tube appears to be without induration, significant erythema or purulent discharge
- Ensure the bumper is in the gastric lumen

Removal

- Loosen the bumper – rotate the tube and push it forward into the gastric lumen a few cm
- If unable to do this – ? If there is buried bumper
- Palpate the abdomen (? Liver) – trajectory
- CT to examine position

Removal

- Buried bumper removal over guidewire – may need to be replaced and allow tube tract to mature before removal
- Once removed, cover the gastrostomy site with clean dressing – change dressing prn or every 6-8 hours until drainage stops
- Gastrostomy tract generally closes withing 24-72 hours

Persistent Fistula

- No established method
- Tract lining disruption with brush or electrocautery with subsequent gastric mucosal endoclipping
- Gastric mucosal endoclipping alone
- May require surgical closure

References

Duszak R, Mabry MR. National trends in gastrointestinal access procedures: an analysis of Medicare services provided by radiologists and other specialists. *J Vasc Interv Radiol.* 2003;14:1031-1036.

Blumenstein I, Shastri YM, Stein J. Gastroenteric tube feeding: techniques, problems and solutions. *World J Gastroenterol*. 2014; 20:8505-8524.

Arora G, Rockey D, Gupta S. High in-hospital mortality after percutaneous endoscopic gastrostomy: results of a nationwide population-based study. *Clin Gastroenterol Hepatol.* 2013; 11:1437-1444.

Goldberg LS, Altman KW. The role of gastrostomy tube placement in advanced dementia with dysphagia: a critical review. *Clinical Interventions in Aging*. 2014; 9:1733-1739.

Schrag SP, Sharma R, Jaik NP, Seamon MJ, Lukaszczyk JJ, Martin ND, Hoey BA, Stawicki SP. Complications related to percutaneous endoscopic gastrostomy (PEG) tubes. A comprehensive clinical review. *J Gastrointestin Liver Dis*. 2007: 16:407-418.

Thompson A, Tye-Din, J, Lomas F. *Can J Gastroenterol.* 2007; 21: 223-225.

References

- Saleem, A. Bruining, H. Baron, T. Viral Seeding of a Percutaneous Endoscopic Gastrostomy Tract From Oral Herpes. Clinical Gastroenterology and Hepatology. 2010; 8: 7-8.
- Richter J, Patrie J, Richter R, et al. Bleeding after percutaneous endoscopic gastrostomy is linked to serotonin reuptake inhibitors, not aspirin or clopidogrel. Gastrointest Endosc. 2011:74.
- Williams E, Sabol DA, Delegge M. Small bowel obstruction caused by bowel wall hematoma after PEG. Gastrointest Endosc. 2003;57 (2) 273.
- Bechtold ML, Matteson ML, Choudhary A, et al. Early versus delayed feeding after placement of a percutaneous endoscopic gastrostomy: a meta-analysis. Am J Gastroenterol 2008; 103:2919.