Percutaneous Endoscopic Gastrostomy (PEG) Placement

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New York Society for Gastroenterology and Endoscopy
46th Annual New York Course

Goals of today

- Understand the ***indications*** for PEG placement
- Describe the ***techniques*** for PEG placement
- Discuss the ***complications*** associated with PEG tubes and their ***management***

What is a PEG?

- **P**ercutaneous
- **E**ndoscopic
- **G**astrostomy

- When placed surgically: Surgical gastrostomy/ G- tube
- When placed by IR: IR gastrostomy/ G- tube
- When placed in the jejunum: PEJ/ Jejunostomy/ J tube

History of PEGs

Gastrostomy Without Laparotomy: A Percutaneous Endoscopic Technique

● A new technique has been developed to establish a tube feeding gastrostomy without a laparotomy. The procedure is particularly useful in high risk patients because general anesthesia is not usually required. The procedure is simple, safe, and rapid. It has been employed in 12 children (and 19 adults) with minimal morbidity and no mortality.

Gauderer MW et al. J Pediatr Surg 1980

Indications for PEG

- Which of the following are indications for PEG placement:
  a) 81 year old man with newly diagnosed head and neck cancer with severe dysphagia
  b) 58 year old woman with dementia
  c) 67 year old man with HTN, DM with recent stroke and unable to eat
  d) 75 year old with Parkinson's and progressive dysphagia
  e) A and C
  f) All of the above

First question: Does the patient need it?

- Clinical situation in which oral intake is unsafe, insufficient or impossible

and

- GI tract is functional

and

- Required for > 30 days

Some common indications for PEG

- Obstruction
  - Head & Neck Cancer
  - Esophageal Cancer
  - Gastric outlet obstruction (venting)
- Neurologic
  - Stroke
  - Dementia
  - Parkinson's
  - Cerebral Palsy
  - MS
  - Motor Neuron Disease
- Reduced level of consciousness
  - Head injury
  - ICU patients
  - Prolonged coma

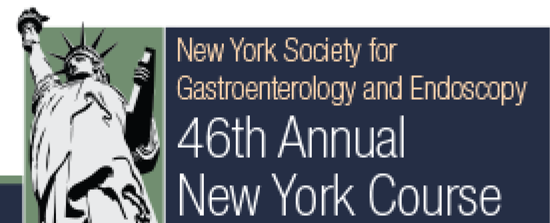
A note on dementia….

- Has not been shown to change survival or increase patients' QOL
- Does improve family's QOL
- *Possible benefit in mild dementia when can live independently[1]

- 30 day mortality: 27%
- 1 year mortality: 40%
- 25% die during the hospitalization when PEG was placed

[1]Suzuki et al. Gastroenterol Res. 2012
McClave & Chang GIE 2003

- All due to underlying condition



Second question: CAN the patient get it

- Procedural
  - Bleeding risk
  - Comorbidities
- Mechanical
  - Inability to open mouth
  - Obstruction
  - Obesity
  - Hiatus hernia
  - Prior stomach surgeries
- Other considerations:
  - Gastric varices
  - Ascites
  - Steroids
- Ethical/Medical futility
  - Limited life expectancy
  - Terminal cancer
  - Severe dementia

Third, and MOST IMPORTANT question

- SHOULD the patient get it….

- Case by case basis based on patient's
  - Needs
  - Preference
  - Diagnosis
  - Life expectancy

It is essential to provide realistic goals and explain the risks and benefits clearly prior to procedure

Questions to consider for PEG placement

- Indication
- PMHx: comorbidities
- PSHx: abdominal surgeries
- Meds: Steroids, antiplatelet/anticoagulant
- PE– can the patient open his/her mouth? Abdominal exam
- Labs: PLT, PT

Assess risk of refeeding

National Institute of Health and Clinical Excellence (NICE) Guidelines

- **High Risk**:
  - ≥ 1 of the following:
    - BMI < 16
    - Unintentional wt loss >15% in past 3-6 months
    - Little/no nutritional intake for 10 days
    - Low levels of K/Mg/Phos before feedings
  - ≥ 2 of the following:
    - BMI < 18.5
    - Unintentional wt loss >10% in

- **Moderate Risk**:
  - ≥ 1 of the following:
    - BMI < 18.5
    - Unintentional wt loss
    - >10% in past 3-6 months
    - Very little intake for >5 days

- **Severely High Risk**
  - Both of the following
    - BMI < 14
    - Negligible intake for >15 days

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All procedures start with informed consent

- Risks
- Benefits
- Alternatives

- The patient will have a tube
- Tube does not mean you can’t eat
- Tube does not mean you can’t swim
- Tube does not have to be permanent (at least 4 weeks)

- We may not be able to safely place the tube

For all techniques.. give antibiotics!!

- Meta-analyses of randomized trials show substantial ↓ in peristomal wound infections

- Recommended: Cefazolin
- PCN Allergic: Clindamycin
- Give **30 minutes** prior to procedure

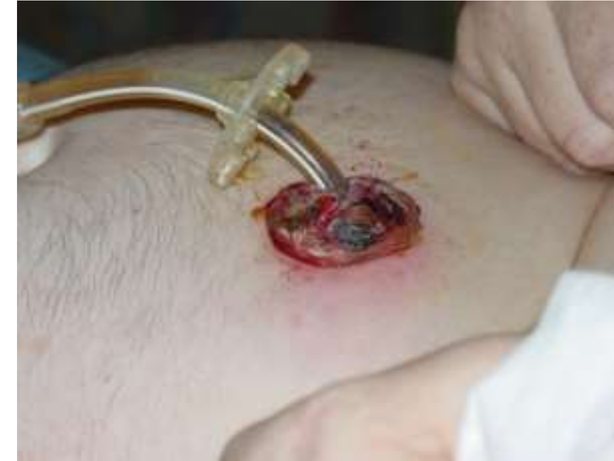
ASGE Standards of Practice Committee GIE 2015

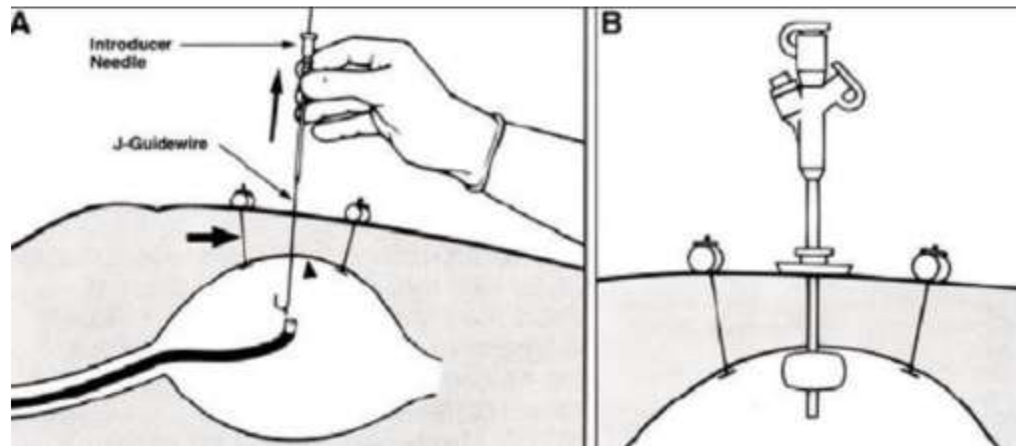
For all techniques: EGD 1st

- Make sure there are no obstacles to PEG placement
  - Ulcer/infiltrative disease in stomach
  - Proximal obstruction
  - Gastric outlet obstruction

Technique

- Push (Sachs-Vine)
- Pull (Ponsky)
- Introducer (Russell)/T-fastener

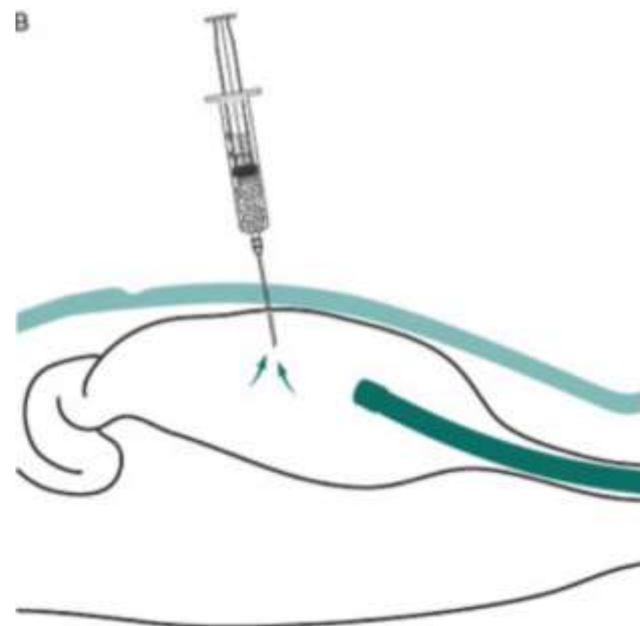


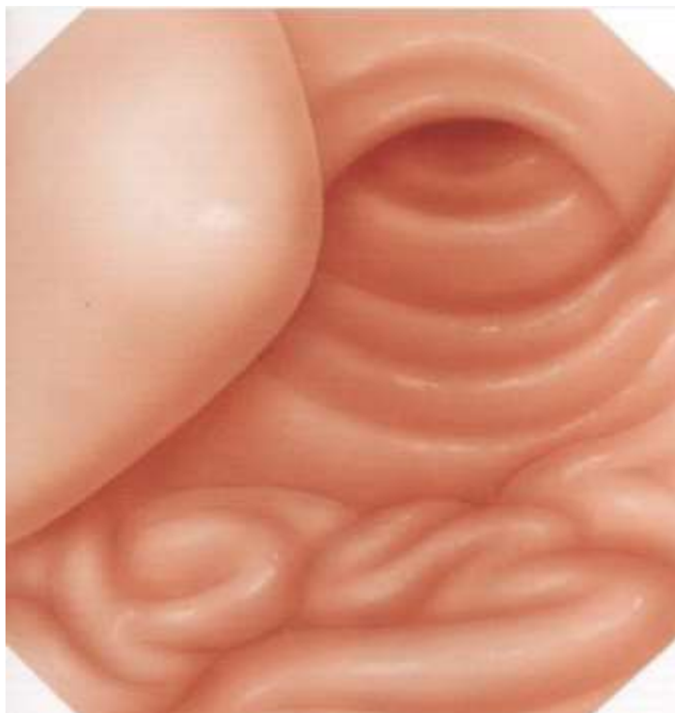


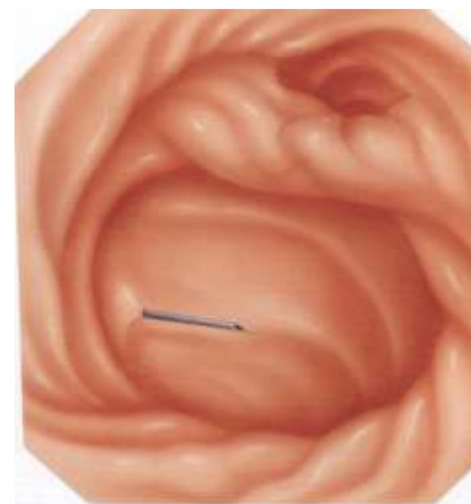
Know your kit

Feeding Tube
External Bumper
Snare
Clamp
Sterile Drape
PEEL
Guidewire
Antiseptic Swabsticks
Gauze
Syringe with Injection Needle
Feeding Tube Adapter
Local Anesthetic
Scalpel
Trochar

Finding an appropriate spot

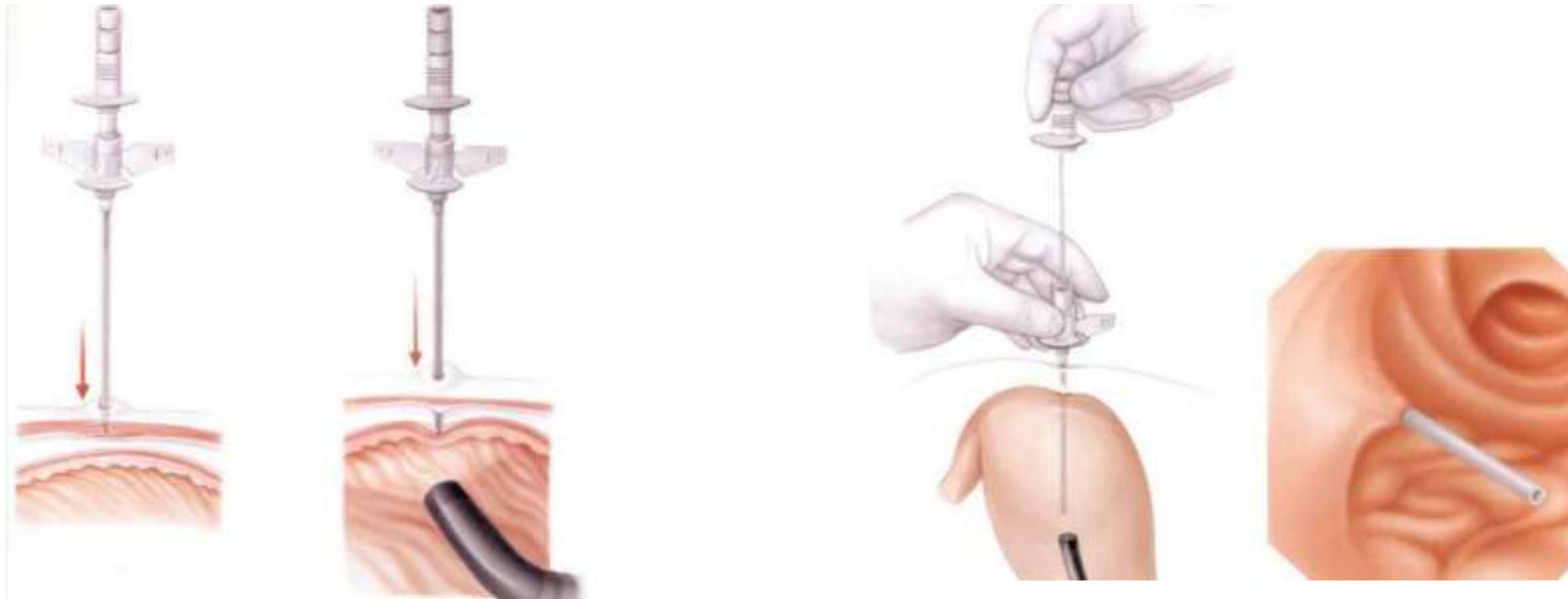


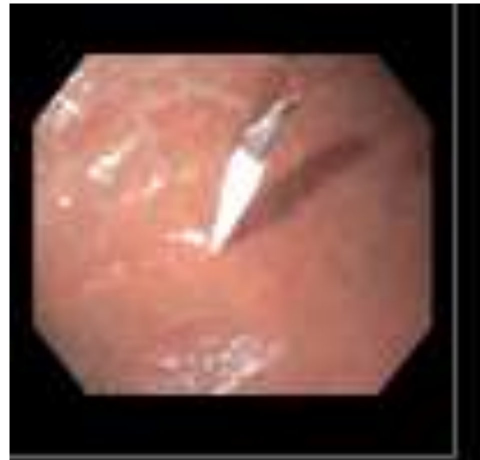


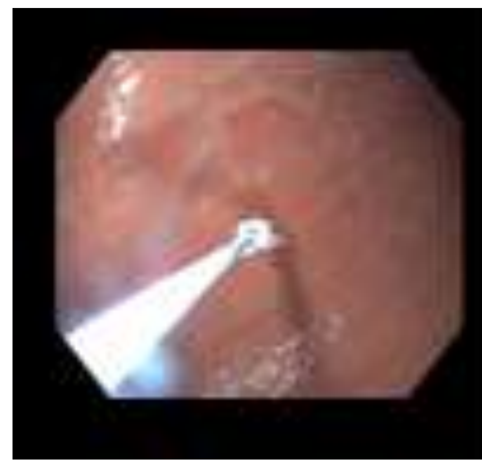


Make an an incision

Trocar and wire insertion

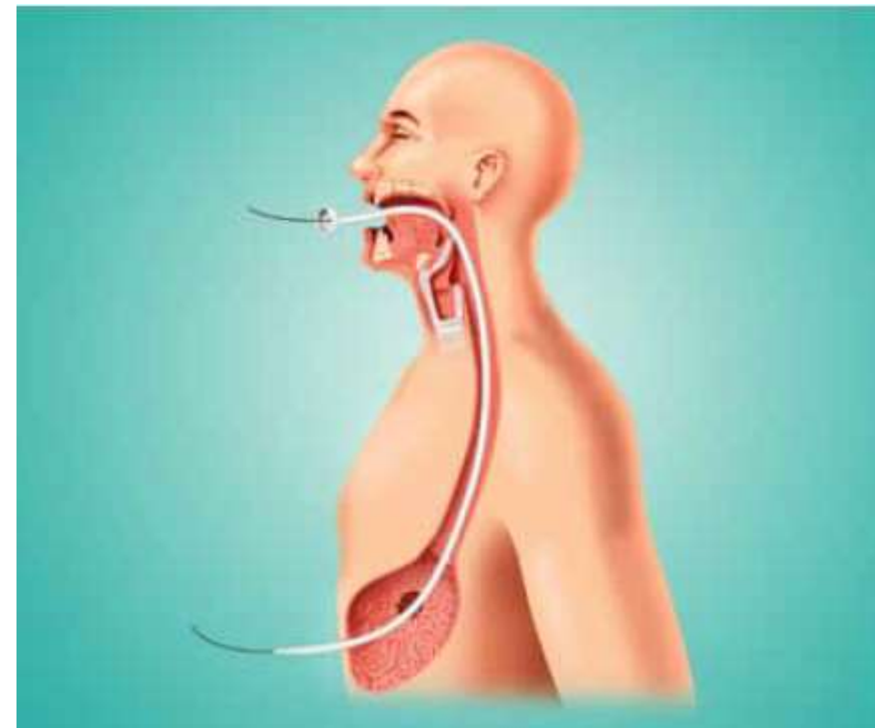




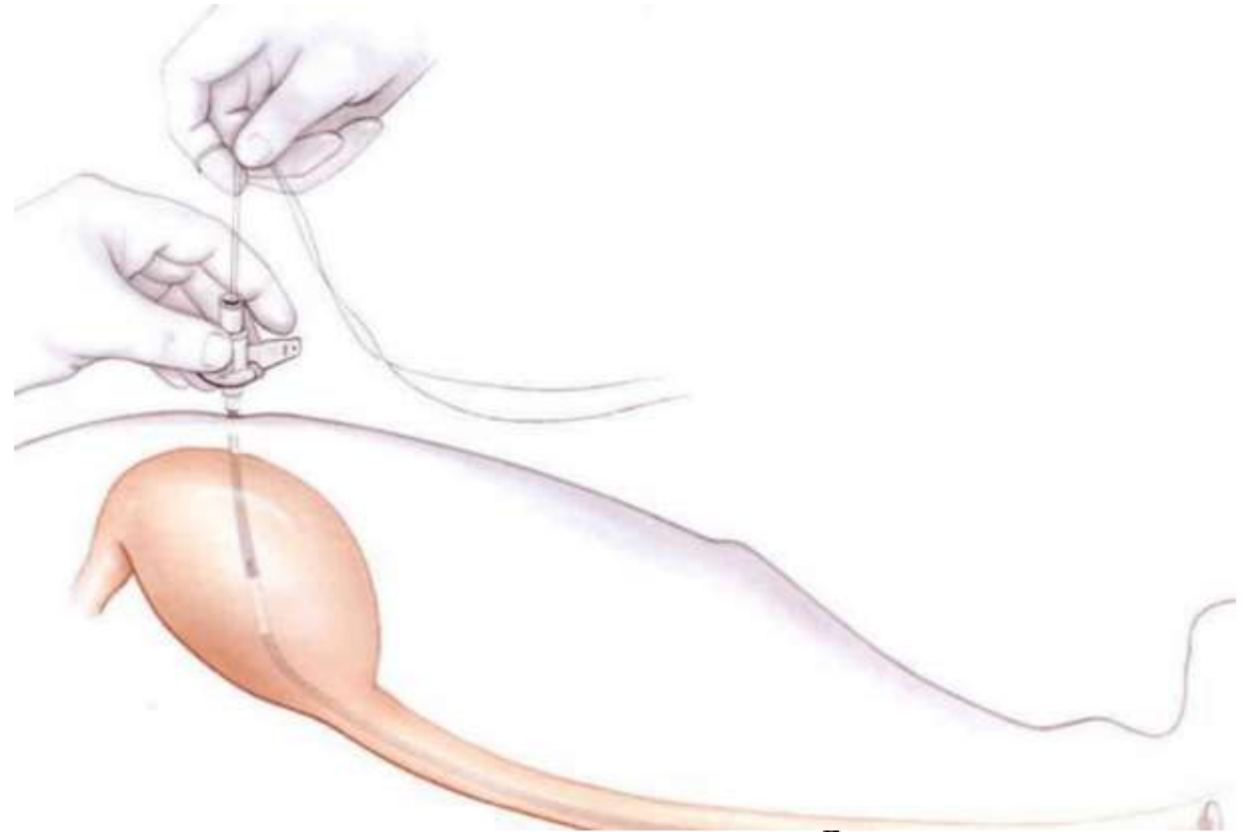


Grasp wire with snare, withdraw the scope

Push Technique



Pull technique



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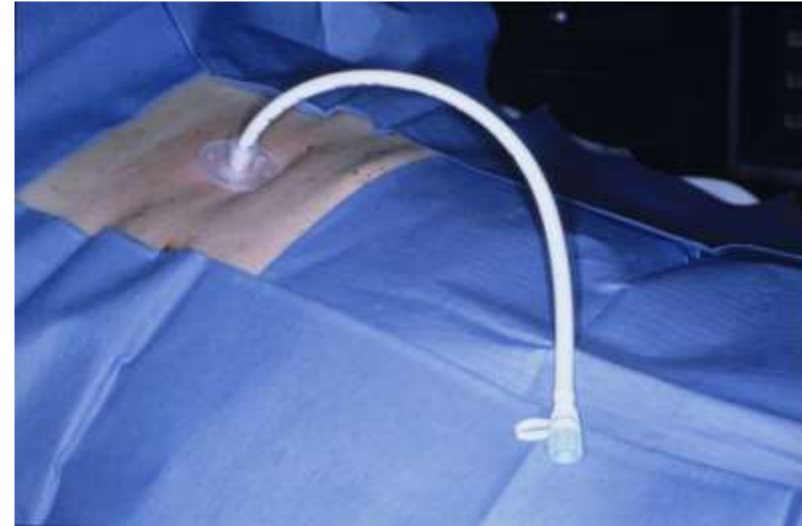
The final product



First page ent

Hi– thanks for putting the PEG in Mr. Dysphagia– when can we start using it!! Thank you, Brand New Intern

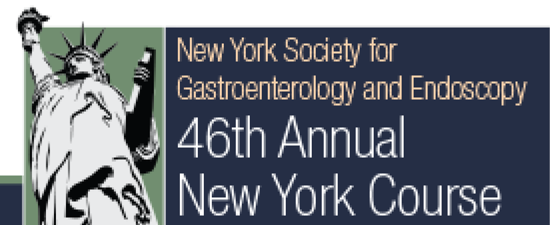
A) Right away
B) In 3 hours
C) Wait until tomorrow
D) Wait 3 days

Can usually use in 3 hours

- Meta-analysis: 467 patients, 5 RCTs (adults)
  - Early (≤ 3 hours) vs. delayed vs. next day feeding
  - **NO** difference in complications or mortality at 72 hours

- Other advice
  - Flush tube before and after feeds & meds
  - Zinc oxide PRN
  - Can bathe/shower after 1 week

Szary NM et al J Clin Gastroentol 2011.



Next page

Hi– I know you just put in the PEG for Mr. Dysphagia–but he and his family would like to know when he can get it out? Thanks again! Brand New Intern

A) Whenever he wants
B) 1 week
C) 4 weeks
D) 1 year

PEGs should stay in for ~4 weeks

- Can remove tube when patient is eating by mouth and not using tube and maintaining weight for ~2 weeks
  - Has underlying issue resolved?
  - Anticoagulation?

- Bedside traction
- Endoscopic

The dread ight page

Hi– I know you spoke to Mr. Dysphagia about leaving the tube in for 4 weeks, but he didn’t like it and ripped it out– his abdomen looks fine! what should we do?! Help!

A) NPO/NGT
B) Put a foley through the existing hole now
C) STAT surgery consult

DO NOT REPLACE BLINDLY!!

- If identified immediately → endoscopically
- If later & no peritoneal signs→ NPO, NGT to suction, Abx, can place new PEG in 7-10 days
- Any signs of peritonitis → surgery

Mr. Dysph

Hey– remember Mr. Dysphagia from a few months ago? Well he had his PEG in for a few months and now he's coming in saying it "somehow felt out"– what should we do??

A) NPO/NGT
B) Put a foley through the existing hole now
C) STAT surgery consult

If > 4 weeks… can usually replace

- Replacement tube or foley
- May need smaller size as fistula may have started to close

Mr. Dysph

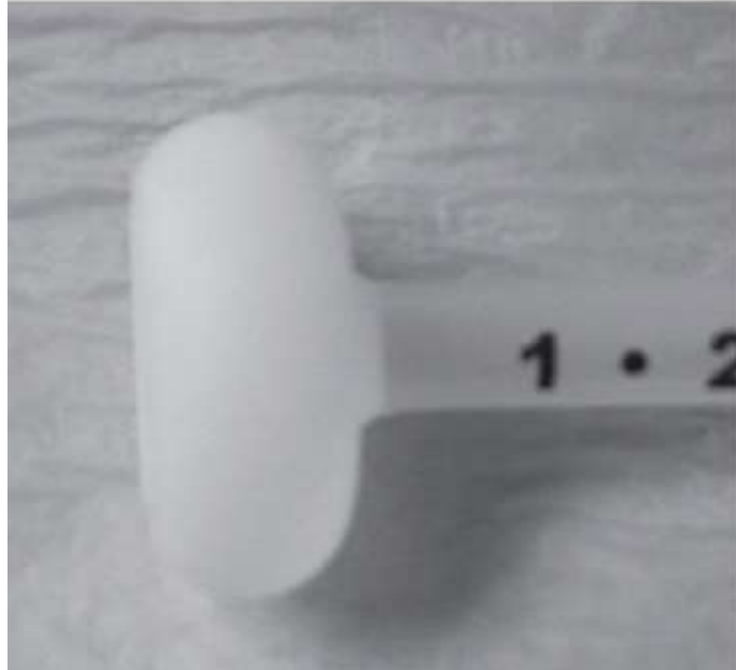
Hey– thanks for your help– we got the foley in– but since he's needed so many replacement tubes he's asking how often he needs these changed or if there are other options? Thanks!

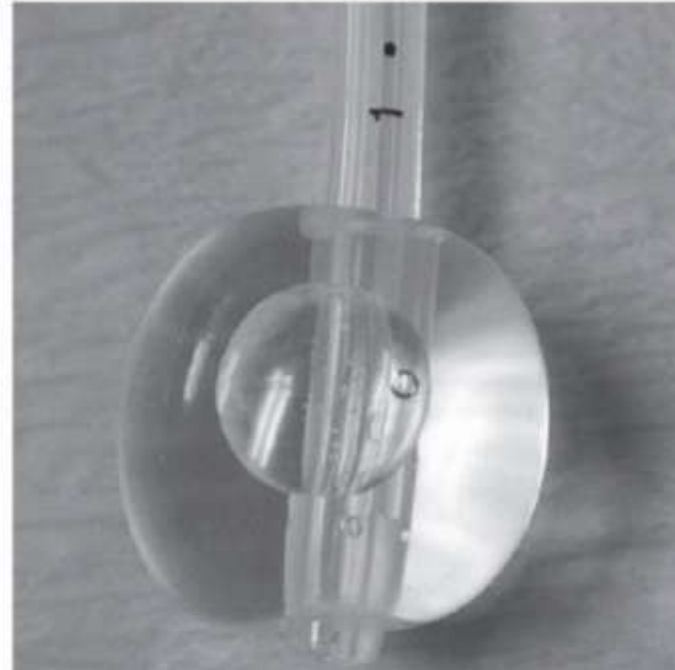
A) Change routinely every 3- 6 months
B) Change routinely every year
C) Change PRN

Tubes can last a long time!

Solid Type

Balloon Type





Lifespan = YEARS

Lifespan = 3-4 months

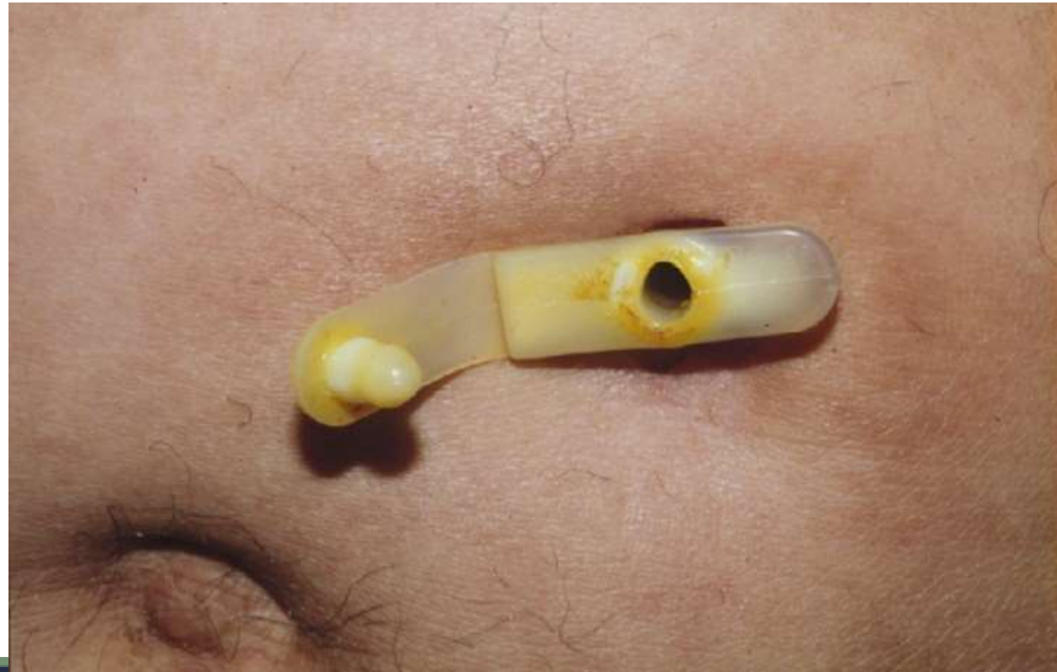
Replacement tubes

- Balloon replacement

- Button (low profile) PEG

Balloon Internal Bolster Type

Solid Internal Bolster Type



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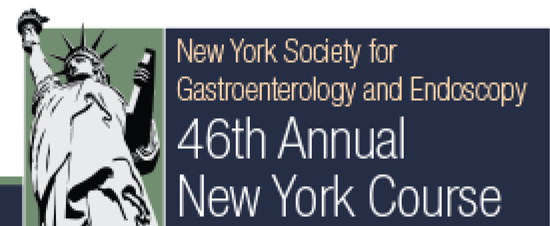
PEG Complication Rates

- Reported complication rates: 0.3% - 70%

  - Different definitions
  - Different populations
  - ↑ complications: ↑ age and comorbidities
  - Majority: MINOR complications

Taylor et al. May Clin Proc 1992; Grant et al .Annals Surg 1993; Larson et al Gastro 1987; Ponsky et al. Am J Surg 1985; Blomberg et al. Scan J Gastroenterol 2012; Keung et al. J Am Coll Surg 2012; Shike et al. MSKCC, unpublished.



PEG: Early Complications

Minor

- Wound infection
- Minor bleeding
- Tube dysfunction
- Tube leakage

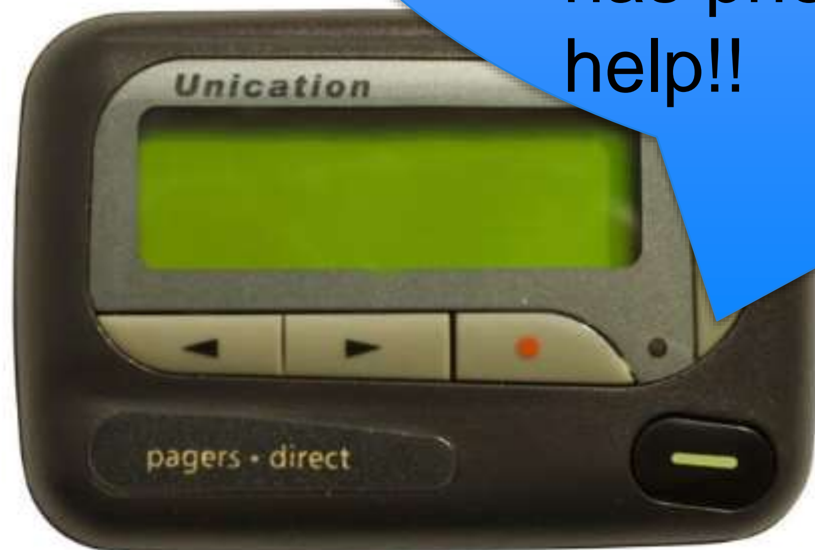
Major

- Aspiration (0.3-1%)
- Peritonitis
- Necrotizing fasciitis
- Bleeding (1%)
- Ileus (3%)
- Perforation (<0.5 -1.8%)
- Transhepatic placement
- Damage to other intra-abdominal organs

McClave & Chang GIE 2003

Common

Hi– you guys placed a PEG in Mr. Soandso earlier today, we got an Xray because he was having some pain at the site but his abdomen is benign. They're calling us saying he has pneumoperitoneum… help!!



A) Just monitor for now
B) NPO/NGT/ABX and STAT surgery consult
C) STAT CT Scan

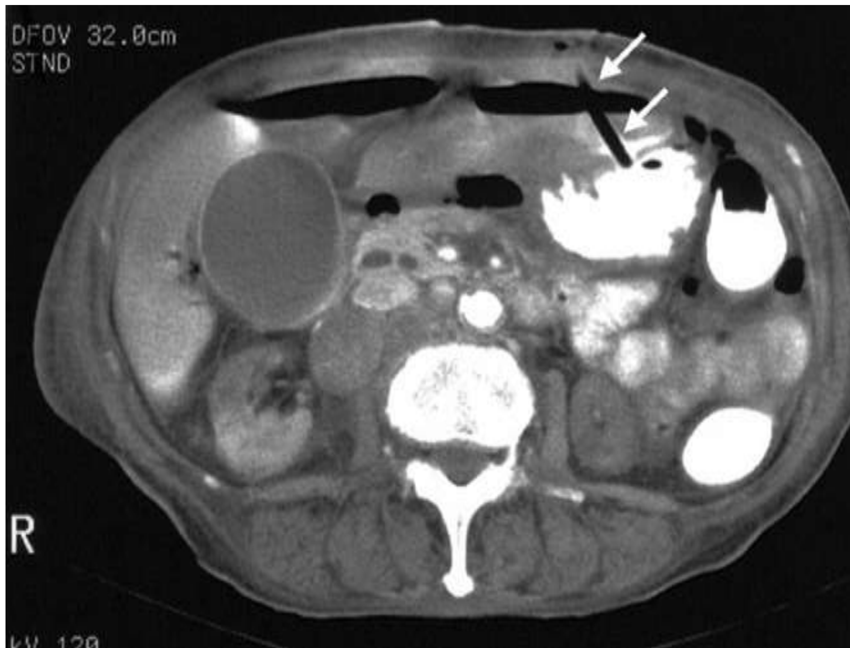
Pneumoperitoneum is common after PEG!

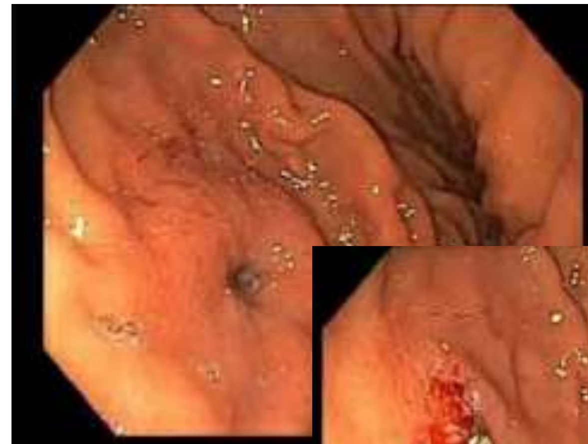
- Incidence: 40-56%
- If asymptomatic, has no clinical significance
- Okay to start feeds!

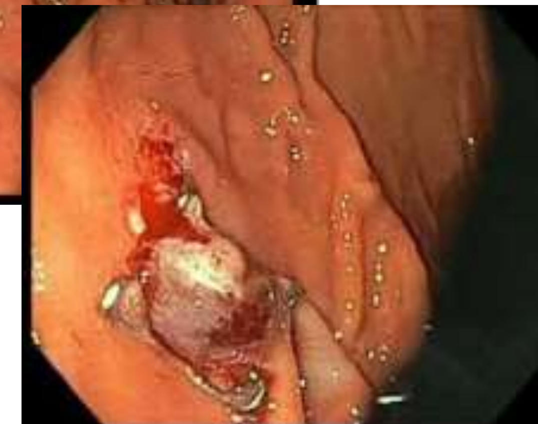
McClave & Chang GIE 2003

PEG: Late Complications

- Deterioration of gastrostomy site
- Buried Bumper
- Colocutaneous fistula
- Persistent gastric fistula after removal







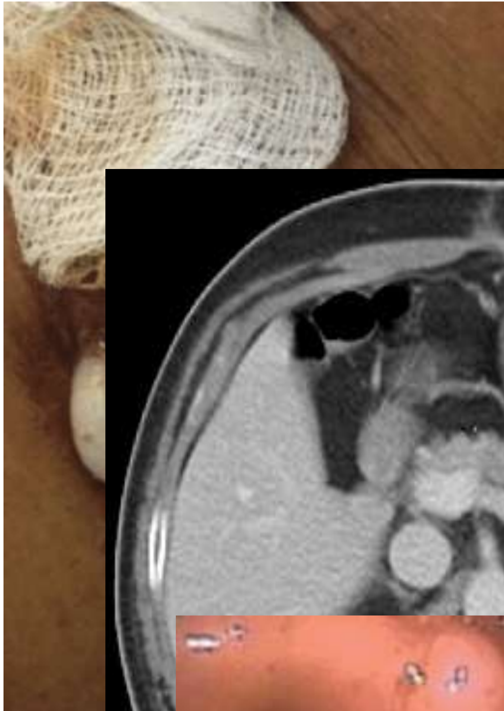
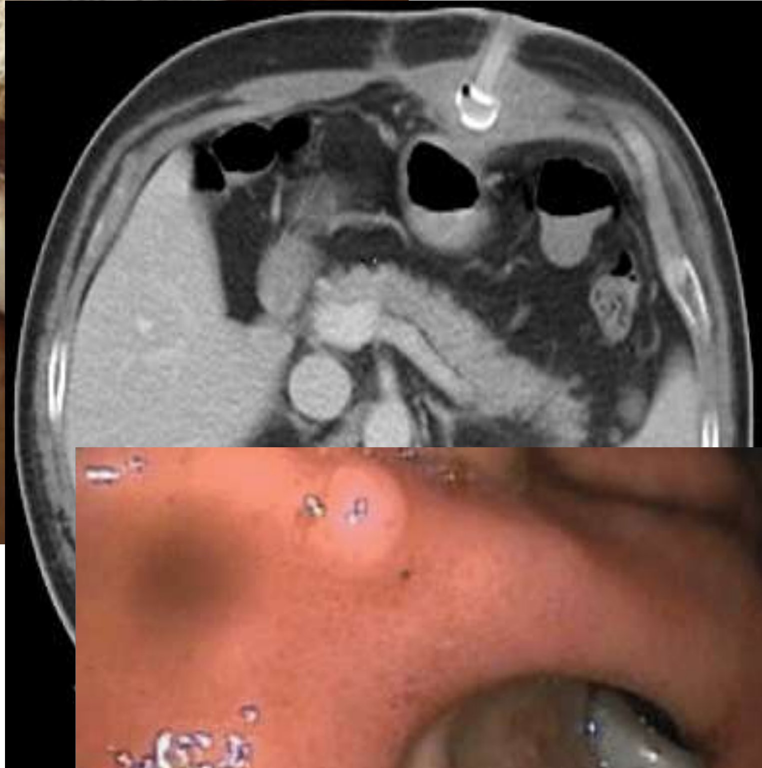
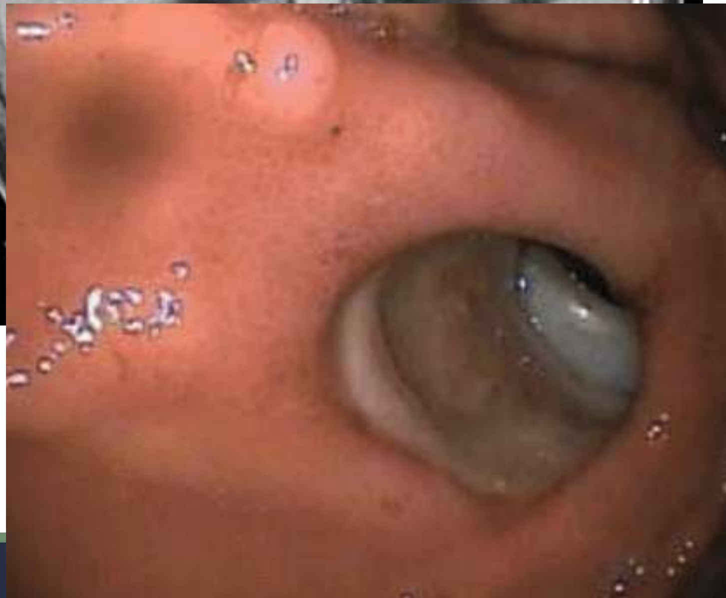
Hi– Remember Mr. Dysphagia? He's back! And now he's saying he can't get anything through the tube! What should we do?? Thank you!!

A) Physical exam to examine the tube
B) Set up for tube exchange ASAP
C) STAT surgery consult

Questions you want to ask….

- What does the tube look like? Hmmmm… not sure!
- Can you move the tube in and out? I don't think so?
- Can you rotate the tube? I don't think so?

Buried bumper

- 2-6%, up to 21.8%
- Pain, inability to use
- Internal bumper embeds into gastric mucosa
  - Too much tension between bumpers
  - Poor nutrition
  - Weight gain
  - Poor healing
- Emergency EGD

Hi– Thanks for fixing that buried bumper! It was working fine and now it's clogged. It's moving freely-- He needs to get his meds tonight. Help!

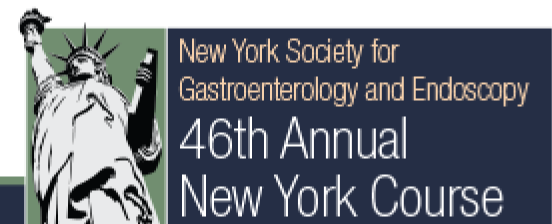
A) Use a cytology brush to clean it out
B) Flush with pancreatic enzymes
C) Flush with draino

All tubes can clog

Best Declogging Agent (0= none 3= total dissolution)	
Viokase + Bicarb + 10mL of warm water (pH 7.9)	**2.9**
Mountain Dew	1.8
Pepsi	1.5
Coke	1.4
Sprite	1.4
Distilled Water	0.9
Viokase	0.8

Be careful using a cytology brush!!!!

Marcaurd et al. JPEN 1989

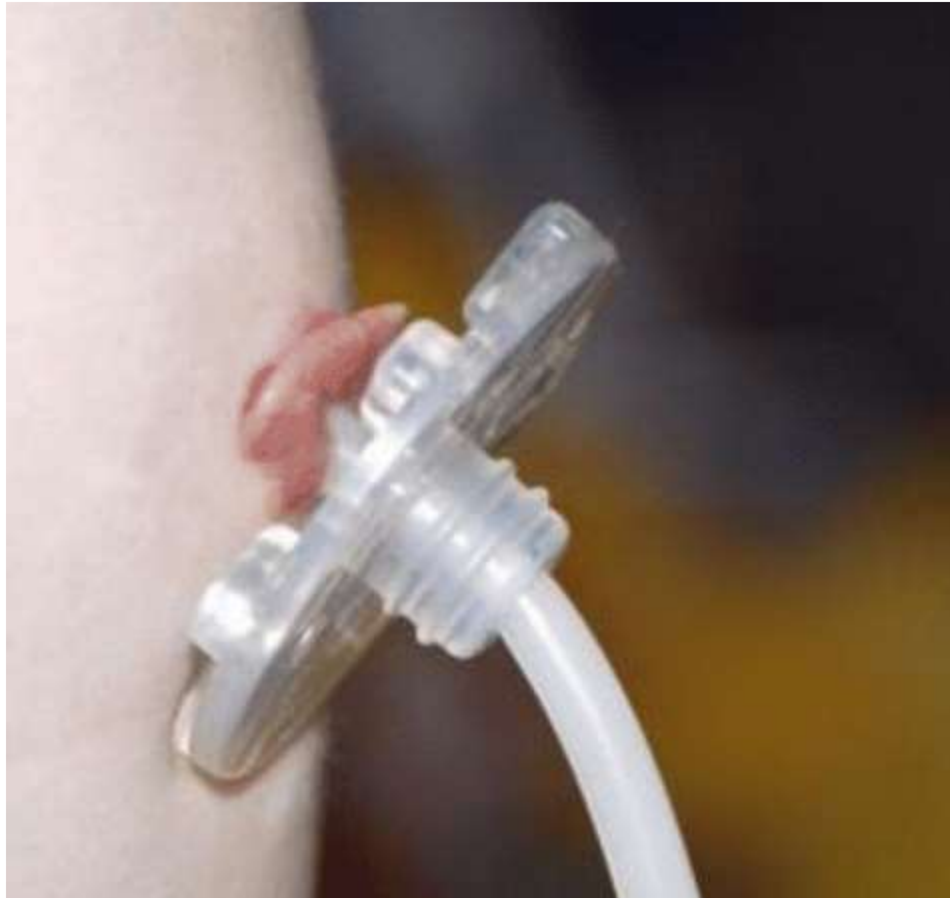


Hi– One last thing– Mr. Dysphagia's tube is working really well but his wife is worried about the tissue around it– anything we can do? Thank you!

I'll give you this one off ☺

Granulation tissue

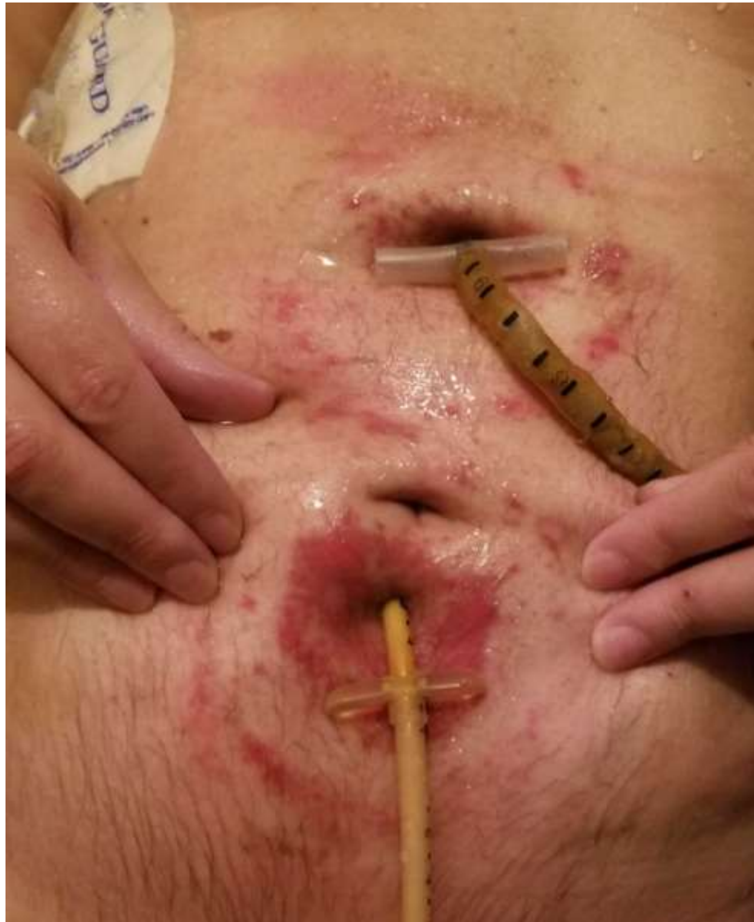
- Can bleed or ooze

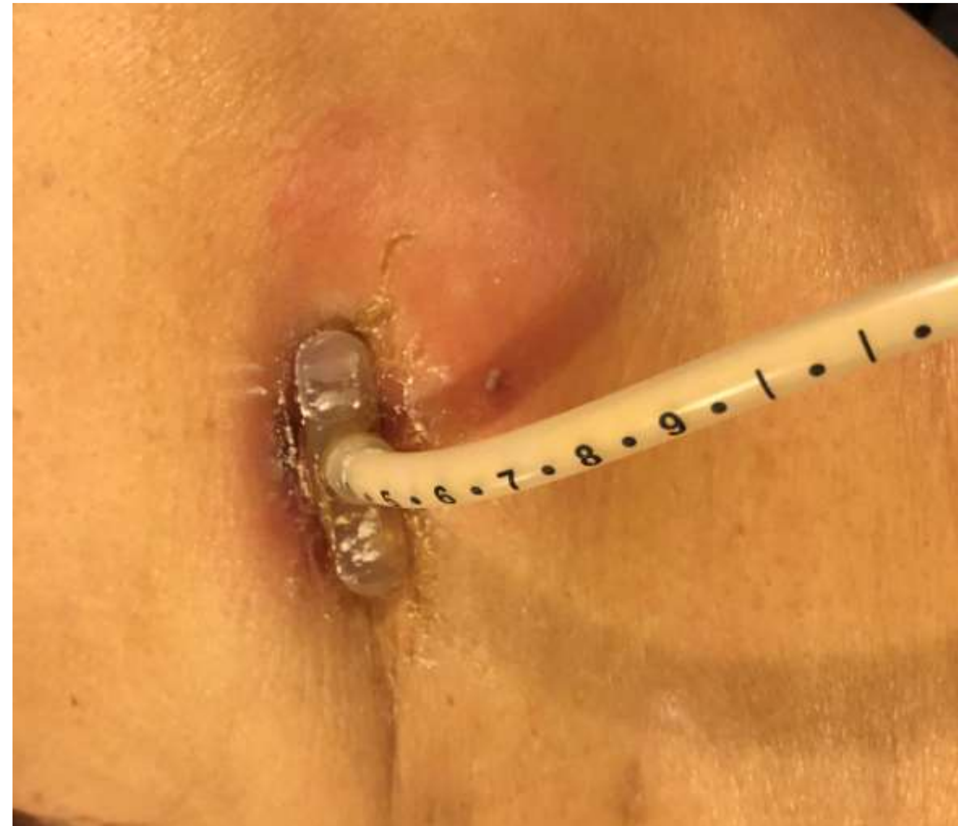


Hi– you guys placed a PEG in Mrs. Blahblah 3 months ago. She's admitted with pneumonia. She's having a lot of leakage around the tube. Our attending would like you to replace it.

A) Plan for replacement with larger size tube
B) Take out tube and place new one in a new place
C) No need to replace

Leakage: can happen at any time





Peristomal leakage

- Very common, leakage of gastric contents/ bile
- Risk factors:
  - Medications (Steroids, chemo)
  - Radiation
  - Constipation
  - Excessive tension and torsion of the tube
- Treatment:
  - Treat constipation
  - Adjust bumper (~1cm)
  - Zinc oxide around tube
  - Do not upsize!!

Summary: PEGs

- PEGs are indicated in patients when oral intake is unsafe, insufficient or impossible
- Pull/push technique is most common technique for placement
- There are short and long term complications of PEGs
- Bottom line….Understanding indications, complications and managing expectations are key