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Type your questions here so that the moderator can see them. Not all questions will be answered but we will get to as many as possible.

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ACG will send a link to a CME & MOC evaluation to all attendees on the live webinar.

ABIM Board Certified physicians need to complete their MOC activities by December 31, 2022 in order for the MOC points to count toward any MOC requirements that are due by the end of the year. No MOC credit may be awarded after March 1, 2023 for this activity.
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If you plan to claim MOC Points for this activity, you will be asked to: Please list specific changes you will make in your practice as a result of the information you received from this activity.

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Violeta Popov, MD, PhD, FACG
February 3, 2022 at Noon Eastern

Week 6, 2022
Current and Emerging Options for the Diagnosis and Management of EoE
Jennifer Horsley-Silva, MD
February 10, 2022 at Noon Eastern

Visit gi.org/ACGVGR to Register
Disclosures:

**Speaker:**
John Fang, MD
*Dr. Fang, faculty for this educational event, has no relevant financial relationship(s) with ineligible companies to disclose.*

**Moderator:**
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**Feeding tubes: What GI’s need to know in 2022**

John Fang M.D.
University of Utah
**Outline**

- **PEG:**
  - Antithrombotic management
  - Removal and replacement
  - Complications
    - Prevent/Manage
- **PEGJ**
  - Methods
  - Tips for success
- **DPEJ**
  - Pull method
  - Tips for success

**Indications for PEG Placement**

- Inability to tolerate adequate PO intake
  - Nutrition
  - Hydration
  - Medications
    - > 30 days
- Gastric decompression
  - Malignancy
  - Bowel obstruction
  - Motility disorder
Endoscopic vs. Radiologic PEG placement

Contraindications to PEG

- Medical Futility
  - Limited life expectancy
  - Dementia
  - Terminal Cancer
- Technical issues
  - Inability to oppose anterior gastric wall to abdominal wall
  - Inability to advance endoscope through esophagus
- Ethical issues
Relative Contraindications

- Massive ascites
- Coagulopathy
- Gastric varices
- Peritoneal dialysis
- Large hiatal hernia
- Peritoneal metastases or carcinomatosis
- Hepatomegaly
- Morbid obesity
- Subtotal gastrectomy
- Gastric neoplasm
- Multiple abdominal surgeries
- Previous mesh repair

The role of endoscopy in enteral feeding. *Gastrointest Endosc.* 2011;74(1):7-12

Pre-PEG Assessment

- Active medications
  - Prophylactic antibiotics
    - i.e 1 gm cefazolin 30 minutes prior
  - Antithrombotic agents
- GI anatomy / Prior abdominal surgeries
- Nutritional status
- Co-morbidities

**Informed consent**

Anti-Thrombotic Management

- ASGE/ESGE guidelines
  - High risk procedure
    - 1.5-2.5% bleeding
  - Low risk pt’s just hold antithrombotics
  - High risk pt’s
    - Hold/Bridge anti-thrombotics
    - Delay and use NET
  - Cont ASA/NSAIDs
  - Plts> 50K, INR>1.5

- When to stop
  - Night before for LMWH
  - ≥48 hr DOAC’s
  - Warfarin 5 days
  - 5-7 d thienopyridines
    - clopidigrel ? 3d

- When to re-start
  - Warfarin: Evening of
  - LMWH: day after
  - DOAC 48 hrs

? Can hold clopidigrel shorter time

- 1st study: Retrospective 1541 PEG’s
  - 143 (9.2%) on clopidigrel
  - 2.1% GI bleed rate
    - No bleeding related PEG placement
    - Held 2.2 days before 1.3 days after
- 2nd study: Comparison on/off antithrombotics
  - 91 total pts (51 on vs. 41 off)
  - No bleeding either group
    - Anti-plts held 1-3 days

- “*PEG on aspirin or clopidogrel therapy is low risk. Does not apply to DAPT.”

References:
- Gastrointest Endosc 2016;83:3–16
- Endoscopy 2021; 53
- J Penn 2012;36:226-230
- Gastrointest Endosc 2016;83:3–16

American College of Gastroenterology
Repeat Endoscopy?

Not necessary if no suspicion of problems during the procedure

• When to Use After Placement
  – Decompress
  – May use for medications immediately
  – Can begin feeds within 4 hours of placement

Am J Gastroenterol. 2008;103(11):2919-24

Adverse Events

Peri-Procedure
• Aspiration
• Infection
• Bleeding
• Pneumoperitoneum
• Very low procedural mortality

Post-Procedure
• Aspiration
• Inadvertent removal
• Leakage
• Gastrocolic fistula
• Neoplastic seeding
• Buried bumper syndrome
• High mortality due to co-morbidities
Complications of Percutaneous Tube Placement

<table>
<thead>
<tr>
<th>Condition</th>
<th>Reported Frequency, %</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major complications</strong></td>
<td></td>
</tr>
<tr>
<td>Aspiration</td>
<td>0.3–1.0</td>
</tr>
<tr>
<td>Hemorrhage</td>
<td>0–2.5</td>
</tr>
<tr>
<td>Peritonitis/necrotizing fascitis</td>
<td>0.5–1.3</td>
</tr>
<tr>
<td>Death*</td>
<td>0–2.1</td>
</tr>
<tr>
<td><strong>Minor complications</strong></td>
<td></td>
</tr>
<tr>
<td>Peristomal infection</td>
<td>5.4–30</td>
</tr>
<tr>
<td>Peristomal leakage</td>
<td>1–2</td>
</tr>
<tr>
<td>Buried bumper syndrome</td>
<td>0.3–2.4</td>
</tr>
<tr>
<td>Inadvertent removal</td>
<td>1.6–4.4</td>
</tr>
<tr>
<td>Fistulous tracts</td>
<td>0.3–6.7</td>
</tr>
</tbody>
</table>

PEG Tips

- Aspiration prevention
- Pneumoperitoneum
- Relative contraindications
  - Previous surgery
  - Ascites
    - Malignant and non-malignant
- Obese patient
  - Spinal needle
  - Delay and re-attempt
Aspiration

• Often occurs during procedure
  – Elevate HOB during placement
  – Aggressive oral care/suctioning
• Can occur later with institution of feeding
  – Potentially reduce the risk by placing feeding tube into the small intestine
    • PEGJ: Percutaneous gastrojejunostomy
    • DPEJ: Direct jejunostomy
• PEG not shown to decrease risk

Cochrane Database Syst Rev. 2015 Aug 4;(8)

Pneumoperitoneum

• Frequent occurrence
• Markedly decreased with CO2 insufflation
• No need for routine x-rays
• Usually clinically insignificant unless signs/symptoms of peritonitis

PEG placement in Ascites

- Drain ascites
  - Paracentesis ? U/S guided
  - 7-10 days till stoma tract mature
- PEG using standard method
- Place gastropexy’s
  - 2-3 Before/after PEG
- Antibiotic coverage

Gastrointest Endosc. 2005;61(1):178-80

PEG Removal

- All modern PEG tubes traction removable
  - If balloon internal bumper deflate balloon first
  - Painful if solid internal bumper
- No sooner than 4 weeks after placement
  - Allow for stoma tract maturation
- Cutting at skin level and allowing internal bumper to pass can cause obstruction
PEG Replacement Tubes

- After stoma tract mature
- Standard or low profile
- Measure stoma tract length w/low profile
- Solid or balloon internal bumpers

PEG replacement Supplies

- Chuxs pad
- Gloves
- Gauze pads: Split drain sponge 2x2 inch, 4x4 inch
- Sterile water
- Syringes:
  - Luer lock, Slip tip, Catheter tip or Enfit
- Viscous lidocaine (2%) or Water-Soluble Lube
- Stoma measuring kit (if needed)
- Replacement PEG tubes:
  - Range of expected sizes, or if known, specific replacement size

Fang, Kinkini Pract Gastro 2021
What the #$!*$ kind of tube is this?

- Initial Placement vs. Replacement
- Standard Profile vs. Low Profile
- Balloon vs. Solid Internal Bolster
- Gastric vs. Gastrojejunal vs. Jejunal
Help! My PEG has fallen out!

Before stoma tract maturation
• Repeat procedure urgently
• NG tube/Antibiotics
• Surgical consult if peritoneal signs
• Prevention
  – T-fasteners
  – Abdominal binder
  – Low profile tube
  – Mittens

After stoma tract maturation
• Early (ER, nursing home)
  – Foley or any available tube
  – Standard Replacement tube
• Late
  – Probe w/wires (beware)
  – Redo - same tract or close
• Confirmation
  – Auscultation/Aspiration not reliable
  – Fluoroscopy with H2O soluble contrast
  – EGD

Peristomal Infections
• Incidence 5.4-30%
• Risk factors
  – DM
  – Steroids
  – Immunosuppression
  – Obesity
• Etiology
  – Skin flora
  – Beware Abscesses
  – Can be fungal
• Treatment/Prevention
  – Prophylactic pre-procedure abx
  – PO/IV broad spectrum abx
  – I+D
  – Surgical debridement

Lynch Fang Pract Gastro 2004;27:66-76
Alkhatib and Adler JCG 2007
Aliment Pharmacol Ther. 2007 15;25(6):647-56
Peristomal Leakage: The Problem

• Most common chronic problem
  – 5-10%
  – Poor QoL
• Pathophysiology
  – Usually gastric contents
  – Excessive tension, side torsion
  – Poor wound healing/nutrition
• Rule out:
  – infection, buried bumper, ulcer, excessive tension
• Complications:
  – Skin Breakdown
  – Infection
  – Repeated clinic visits procedures

DO NOT OVERLY TIGHTEN BUMPER!!!

Leakage: The Good, the Bad, the Ugly
Peristomal Leakage: Treatment

• Stoma Nurses
• DIY Etsy
• Not optimal solutions

Peristomal Leakage: Prevention + Treatment

• Stabilize side to side motion
  – Hollister clamp
  – Low profile device
  – Remove and replace
• Wound/stoma/skin care
  – Acid suppression
  – Rx fungal infection
  – Barrier creams/foam pads
• DO NOT:
  • Tighten bumper
  • Put in larger diameter tube
Buried Bumper Syndrome

- Risk Factors
  - Excessive tension between external and internal bumpers
  - Weight gain
  - Poor wound healing
- Replace using pull method if can

What is This?

Granulation Tissue

CANCER!!
PEG site metastases

- Active aerodigestive Cancer
  - ≤1% incidence
  - Portends Poor prognosis
- DDx granulation tissue
- Mechanism:
  - Direct seeding
  - Hematogenous
- Consider alternative methods
  i.e. IR, Russell introducer

*J Oral Maxillofac Surg* 2006;64:1149-57
*Surg Endosc*. 2016 Dec 30 Epub

PEG Push: Russell Introducer Method

- Technique
  - Gastropexy’s performed
  - Dilator with peel-away introducer over guidewire
  - G-tube passed through the introducer→ peeled away
  - Can do endoscopically
  - Unsedated with ultrathin scope
- Introducer kit
  - Gastropexy device
  - Serial dilator

*Maxwell, Fang JPN* 2011;35:630-5
Post PEG gastrocutaneous fistula

- Persistent fistula risk factors
  - Larger diameter
  - Longer indwelling
  - DPEJ
  - Epithelialization

- Treatment
  - Denude stoma tract
    - APC
    - Biopsy/Brush
  - Clipping/Suturing
- Doesn't always work
  - 89% (42/47) initial success
  - 46% (19/41) delayed success

Surgical Endoscopy Oct 2014

Endoscopic PEG Fistula Closure
Indications for Jejunal Access

- Gastric abnormalities
  - Gastroparesis
  - Previous gastric resection
  - Gastric outlet obstruction
  - Inability to place PEG
- Pancreatitis
- Feeding intolerance
- Improved nutrient delivery
- Aspiration
  - Intolerance to PEG
  - GERD

When expertise available

Clip Assisted PEGJ

- Endoscopic clip(s)
  - Use as forceps
  - Use to anchor
  - Multiple clips
- Similar to NET’s
  - +/- fluoro
  - 21 min procedure time

Faigel DO JPEN. 1996 20:306-8
PEGJ ultrathin technique

PEGJ Tips

- Increase post pyloric tube length
  - Gastrostomy
    - Angled to pylorus
    - Closer to pylorus
    - Straighter to pylorus
  - Longer J-tube
  - Shorter external tube length
  - Decrease dead space

**DPEJ: Direct Percutaneous Endoscopy Jejunostomy**

- **Technique**
  - colon- or enteroscope
  - transilluminate jejunum
  - percutaneous puncture
  - Pull just like pull-PEG
- **68-100% success**
  - improved post-surgery

Shike. Gastrointest Endosc 1996;44:536-40

**DPEJ Advantages**

- Greater stability than PEGJ
  - Decreased migration, kinking etc.
  - More distal jejunal access
- Larger diameter tubes
  - Better infusion/decompression
  - Less clogging
- Less morbidity than surgical Jejunostomy
Change in aspiration events with DPEJ

- Before DPEJ
  - 33 total
  - Range 1-6
  - Mean 3.0 ± 0.426
- After DPEJ
  - 3 total
  - Range 0-2
  - Mean 0.272 ± 0.195


DPEJ Placement
DPEJ Tips For Improving Success

• Trans-illumination
  – Easier in thin body habitus
  – Easier in post-surgical
  – Use transillumination on endoscope

• Site Identification
  – Must have both transillumination and indentation
  – ? Fluoroscopy
  – Balloon enteroscopes

• Clear stoma path
  – Use safe track technique

• Small bowel peristalsis
  – Glucagon
  – General anesthesia

Conclusion: Everything you need to know?

• PEG most common
  – Can do better than IR
  – Complications
    • Prevent
    • Recognize early

• Jejunal Access
  – Endoscopic techniques
  – Tailored to the clinical scenario
  – Expertise/Tips make easier

• Decrease the #!*$ factor
Questions?

Speaker:
John Fang, MD

Moderator:
Kathryn R. Byrne, MD

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