Endoscopic management of GI malignancy

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Endoscopic approaches in GI malignancy - Agenda

1: Pancreatic cancer
   a. Diagnosis - brush cytology vs. EUS/FNA
   b. Management of biliary strictures (plastic/metal stents)
   c. Pain control/palliation
2. Esophageal Cancer - does EUS have a role in staging?
3. Luminal stenting for GI malignancy
4. Endoscopy in altered anatomy

Pancreatic Cancer - Case #1

65 y.o. M in generally excellent health presents with several weeks of episodic post-prandial abdomen pain and sudden worsening RUQ pain.

Evaluated in New Hampshire:
   - Afebrile, benign exam - mild RUQ tenderness
   - ALT 671, AST 297, Thiti 2.9, Lipase 314.
   - RUQ ultrasound shows biliary dilation

Initial concern for gallstone blocking the bile duct

Patient requested further evaluation at BIDMC
• LFTs normalize and symptoms partially improve after biliary stent placement
• ERCP brushings show 'atypical cells'
• CA19-9 = 35ng/dL (0-37)

What is the next step?
- 2.5 cm mass in the pancreatic head with associated double-duct sign
- No celiac/SMA involvement
- The adjacent portal vein is narrowed just distal to the splenoportal confluence.
- No evidence of metastatic disease
- Several small peri-pancreatic lymph nodes do not meet size criteria.
Pancreatic Cancer - Case Summary

65 y.o. M in generally excellent health presents with several weeks of episodic post-prandial abdominal pain and sudden worsening RUQ pain.

Found to have 'double duct' sign on ERCP, 3cm pancreatic mass identified on CT scan, compressing portal vein.

Cytology results:
ERCP brushing: atypical, likely reactive epithelium
EUS-FNA positive for: adenocarcinoma

Tissue diagnosis for pancreatic cancer

- Sensitivity of biliary cytology/brush sample during ERCP for pancreatic adenocarcinoma is ~30%.

- Sensitivity of EUS-FNA for pancreatic adenocarcinoma is ~75-85% (94% if 'atypical' or 'suspicious' findings are included)

Fogel EL et al. GIE 2006
Turner BG et al. GIE 2010
Bang JY et al. GIE 2012

With new diagnosis of pancreatic adenocarcinoma causing jaundice, is plastic or metal bile duct stent more appropriate?
Plastic vs. Metal Biliary Stent?
- Plastic biliary stents:
  - Cheaper ($80).
  - Luminal diameter ~3mm.
  - Typically need replacement Q4-8 weeks because of biliary sludge blockage

- Metal biliary stents:
  - Expensive ($1000).
  - Luminal diameter = 10mm
  - No-longer 'permanent'; newer 'covered/coated' stents are removable endoscopically
  - Metal stent does not interfere with Whipple resection
  - May be cost-effective for patients receiving neoadjuvant chemotherapy prior to Whipple (i.e. avoids repeat ERCPs for plastic stent blockage/exchange)

Strange-but-true trivia interlude:
Inventor of self-expanding metal Wallstent (used in GI/biliary/vascular/urologic interventions)
Strange-but-true trivia interlude:

Inventor of self-expanding metal Wallstent (used in GI/biliary/vascular/urologic interventions):

Hans Wallsten

Pancreatic Cancer - Case Summary

65 y.o. M now with new diagnosis of pancreatic cancer, not surgically resectable. Started chemotherapy, however having worsening abdominal pain despite opiate pain medications. Additional treatment options for pain relief are considered.

Celiac Plexus Neurolysis/Block

Wang et al. Abdom Imaging 2006
Celiac Plexus Neurolysis/Block

- Transcutaneous celiac/splanchnic nerve block first proposed by Kappis in 1914 via posterior approach – variations of this performed by anesthesiologists and radiologists.
- Therapeutic EUS has become dominant approach due to proximity of celiac ganglion to stomach lumen.

Leblanc et al. GIE 2011

Celiac Plexus Neurolysis

- Celiac plexus is located within 2-3cm of posterior gastric wall - easily accessed by EUS needle.
- Bupivacaine and ethanol are injected under EUS guidance, adjacent to celiac artery takeoff.
- ~50-75% patients will experience some relief of pain (complete relief of pain achieved in ~10-20%).

Leblanc et al. GIE 2011
Katsumi et al. J Clin Gastro 2010
EUS-guided Fiducial Placement
• Fiducials easily placed via 19g EUS needle, in pancreatic tumor or in any area of interest near GI lumen.
EUS-guided Fiducial Placement

- Sterile bone wax used to seal fiducial into tip of needle

Case #2: Esophageal Cancer

70 y.o. M with history of Barrett’s esophagus (last EGD 3 years ago) presents with abdominal pain to ER. Ultimately diagnosed with mild cholecystitis, however, CT scan was obtained, showing mild distal esophageal thickening.

Patient denies dysphagia, weight loss - recovering well after CCY.

Medical history notable only for hypertension.

Referred for EGD.
Biopsy confirms invasive adenocarcinoma

What is the optimal approach to esophageal CA staging?
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T3 N1 (positive FNA)

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PET CT scan

- 2cm exophytic lesion demonstrating FDG-avidity (SUVmax = 6.8)
- FDG-avid left supraclavicular lymph node (SUVmax = 4.7)
- Possible paraesophageal lymph node (SUVmax = 3.9)

PET/CT sensitivity of 51%, spec of 84% for detection of nodal metastases in esophageal CA (van Westreenen et al. J Clin Onc 2004)

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What is the optimal approach to esophageal CA staging?
A practical ‘outside→in’ approach:

1. **PET-CT** to evaluate for distant/metastatic disease
   - if ‘yes’ → treatment for stage IV
   - if ‘no’ or equivocal FDG avid regions → **EUS**

2. **EUS** (with 2 specific goals in mind)
   - A. lymph node evaluation/FNA
   - B. eval for endoscopic resection (T1a?)
   - *EUS also useful for T staging (~75% accurate; better than any other imaging modality, but far from perfect)*

Pech et al. Endoscopy 2010
68 y.o. F with long history of reflux undergoes EGD because of persistent symptoms despite PPI.

Approximately 3cm of Barrett’s esophagus is noted, and biopsies show high grade dysplasia.

Referred to BIDMC for possible radiofrequency ablation.
Biopsy confirms HGD with focus of adenocarcinoma.

Proposed Algorithm for Suspected Superficial Esophageal Cancer

Thosani et al GIE 2012
EMR specimens confirm T1a (intramucosal) cancer.

A 4-slide summary of Luminal Stenting

Near-complete obstruction due to esophageal CA
Self-expanding metal stent placement
Common roles for luminal stenting in GI malignancy

1. **Esophageal cancer:** Symptomatic patients who are not candidates for chemoradiotherapy, or who have recurrent dysphagia following definitive chemoradiotherapy

2. **Colon cancer:** Symptomatic obstruction in patients with unresectable disease, or, occasionally, to decompress colon as a temporary 'bridge' to surgery

3. **Pancreatic cancer:** Unresectable disease causing duodenal obstruction (may require both biliary and duodenal stenting)

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**Brief Summary of Luminal Stenting**

- **Uncovered** stents
  - Original type of self-expanding metal stent (SEMS)
  - Lower migration risk
  - After several weeks, cannot be removed because of tumor ingrowth

- **Covered** stents
  - More recent type of SEMS now much more commonly used
  - Higher migration risk
  - Ease of endoscopic removability
  - Decreased tumor ingrowth

*Partially covered* stents also exist, but are uncommonly used.
1. Pancreatic cancer diagnosis: EUS-FNA much more sensitive than ERCP brush cytology (~80% vs. 30%)

2. Biliary stenting: plastic stents more cost effective for short term stenting... but self-expanding metal stents cost-effective for patients receiving chemotherapy prior to Whipple (i.e. avoids repeat ERCPs for plastic stent blockage/exchange)

3. Esophageal Cancer: EUS most useful for determining endoscopic resectability in early stage disease and for lymph node eval/FNA after PET-CT

Summary Points: Endoscopic approaches in GI malignancy

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Failed ERCP in patient with pancreatic cancer/ampullary infiltration

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PTC/PTBD: Historical 'back-up' plan for failed endoscopic/ERCP drainage in patients with malignant jaundice

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EUS-guided biliary access: Newer, 'better' 'back-up' plan - avoids need for external drains

3 sites of EUS-guided biliary access

Duodenal obstruction or other tumor invasion