Clinical use of endosonography (EUS)
EUS equipment

• What types of echoendoscopes (EUS) are used in clinical practice?
EUS equipment

• What types of echoendoscopes (EUS) are used in clinical practice?

  – Radial EUS (mechanical and electronically 5-10-20 MHz)
  – Liniar EUS (5-7.5 MHz)
  – Mini-probe EUS (high frequency, 20MHz)
Indications EUS

• What are indications for EUS?
Indications EUS

• What are indications for EUS?

  – Evaluation of luminal malignancies
  – Evaluation of submucosal abnormalities
  – Evaluation of pancreatico-biliary disease
  – Evaluation of mediastinal disease
  – Evaluation of perianal disease
  – Evaluation of extraluminal lesions identified by other modalities
  – Therapeutic applications
Esophageal EUS

• What is the role of EUS in Barrett esophagus?
  – No dysplasia / low grade dysplasia
  – High-grade dysplasia
Esophageal EUS

• What is the role of EUS in Barrett esophagus?
  – No dysplasie / low grade dysplasia
  – High-grade dysplasia

  – No indication for EUS in low-grade / no dysplasia
  – Exclude deep invasion / submucosal invasion
  – Exclude loco-regional lymphadenopathie
Esophageal EUS

• What is the role of EUS in staging of esophageal cancer?
Esophageal EUS

• What is the role of EUS in staging of esophageal cancer?
  – EUS is superior to CT in local (T) staging
  – Nodal involvement at least as good as CT
  – Limited role for distant metastases (ev. liver metastases)
Gastric EUS

• What is the accuracy of EUS in staging of gastric cancer?
Gastric EUS

• What is the accuracy of EUS in staging of gastric cancer?

  – T stage: 71-88% (superior to CT)
  – N stage: 77-80% (superior to CT)

  – Risk of overstaging (particular T2)
Gastric EUS

• What is the accuracy of EUS in staging of gastric lymphoma?
Gastric EUS

- What is the accuracy of EUS in staging of gastric lymphoma?
  - T stage: 91-95%
  - N stage: 77-83%
EUS submucosal lesions

• Correlate EUS pattern with most likely pathology

Anechoic
Leiomyoma

Hyperechoic
GIST

Hypoechoic
Lipoma
Liposarcoma
Cystic lesion
EUS submucosal lesions

- Correlate EUS pattern with most likely pathology

Anechoic
- Leiomyoma

Hyperechoic
- GIST
- Lipoma

Hypoechoic
- Liposarcoma
- Cystic lesion
EUS submucosal lesions

• How high is the match between EUS patterns of submucosal lesions and pathology?
• What is the accuracy of EUS with FNA to diagnose submucosal lesions?
EUS submucosal lesions

- How high is the match between EUS patterns of submucosal lesions and pathology?
- What is the accuracy of EUS with FNA to diagnose submucosal lesions?
  
  - EUS matches pathology: 77%
  - EUS + FNA accuracy: 80-92%
EUS submucosal lesions

• Which markers are diagnostic for GIST tumors?
  – C-Kit (CD 117)
  – Desmin
  – S-100
  – Actin
  – CD34
EUS submucosal lesions

• Which markers are diagnostic for GIST tumors?
  – C-Kit (CD 117)
  – Desmin
  – S-100
  – Actin
  – CD34
EUS pancreatic lesion

• What is the differential diagnosis of pancreatic tumors?
EUS pancreatic lesion

• What is the differential diagnosis of pancreatic tumors?
  – Adenocarcinoma
  – Lymphoma
  – Neuroendocrine Tumors (NET)
EUS pancreatic lesion

• EUS is superior to CT and/or MRI in identifying pancreatic lesions?
  True/False

• EUS is superior to CT/MRI in staging pancreatic cancer?
  True/False
EUS pancreatic lesion

• EUS is superior to CT and/or MRI in identifying pancreatic lesions?
  True/False

• EUS is superior to CT/MRI in staging pancreatic cancer?
  True/False
EUS pancreatic lesion

• Which conditions limit the ability of EUS to identify pancreatic cancers?
EUS pancreatic lesion

• Which conditions limit the ability of EUS to identify pancreatic cancers?

  – Chronic pancreatitis
  – Diffuse infiltrative pancreatic cancer
  – Proeminent ventral/dorsal anlage
  – Acute pancreatitis
EUS choledocholithiasis

• What is the accuracy of EUS to detect choledocholithiasis?
  – EUS vs. Transabdominal US
  – EUS vs. MRI/MRCP
  – EUS vs. ERCP
EUS choledocholithiasis

• What is the accuracy of EUS to detect choledocholithiasis?
  – EUS >> Transabdominal US
  – EUS = MRI/MRCP
  – EUS < ERCP (but more cost-effective than Dx ERCP)
  
  – Accuracy EUS for choledocholithiasis >90%
EUS choledocholithiasis

• Which are very strong, strong and moderate predictors for choledocholithiasis?
EUS choledocholithiasis

• Which are very strong, strong and moderate predictors for choledocholithiasis?
  – Very strong:
    • CBD stones on transabdominal US
    • Clinical ascending cholangitis
    • Bilirubin >4mg/dl (>68 mcmol/L)
  – Strong:
    • Dilated CBD >6mm with gallbladder in situ
    • Bilirubin 1.8 – 4.0 mg/dL (30-68 mcmol/L)
  – Moderate
    • Abnormal LFT’s other than bilirubin
    • Clinically gallstone pancreatitis
    • Age >55 years
EUS choledocholithiasis

- What are the criteria to high, intermediate and low probability of CBD stones?
EUS choledocholithiasis

• What are the criteria to high, intermediate and low probability of CBD stones?
  – High probability:
    • Any very strong predictor
    • Both strong predictors (CBD >6mm and Bilirubin 30-68)
  – Low probability
    • No predictors
  – Intermediate probability
    • One strong predictor and any moderate predictors
EUS choledocholithiasis

• What is the role of EUS in suspected choledocholithiasis?
Complications of EUS

- What is the perforation rate for diagnostic EUS?
  - How does it compare to the perforation rate of gastroscopy?
Complications of EUS

• What is the perforation rate for diagnostic EUS?
  – How does it compare to the perforation rate of gastroscopy?

  – Perforation rate: 0.03%, similar to gastroscopy
  – Higher perforation rate in elderly patients (>65y) and with h/o difficult intubation
Complications of EUS

- What is the infection rate for EUS with FNA?
  - Which patients should receive antibiotic prophylaxis?
Complications of EUS

• What is the infection rate for EUS with FNA?
  – Which patients should receive antibiotic prophylaxis?
    – Infection rate: 0.4% - 1.0%; more frequent with FNA for cystic lesions
    – Antibiotic prophylaxis for patients with cystic lesions and after transrectal biopsy
Complications of EUS

• What is the rate of hemorrhagies following EUS with/without FNA?
Complications of EUS

• What is the rate of hemorrhagies following EUS with/without FNA?

  – Limited hemorrhage: 1.3%