History and Future of Endoscopic Ultrasound (EUS)

- 1966
  - PDL's 2nd year medicine
  - Father of Modern Medicine

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Background
- 1895 – Roentgen – Xrays
- 1913 – Fessenden – "oscillator"
  1990’s – Ultrasound
- WWII – Nuclear medicine

Modern Medicine

I can examine him from the back.
1895 – Roentgen – Xrays
1913 – Fessenden – “oscillator”
1950’s – ultrasound
WWII – nuclear medicine
1957 – “flexible” fiberscope

Where do you insert that?

What’s a cystoscope?
History and Future of EUS

Background
- 1895 – Roentgen – X-rays
- 1913 – 50's Fessenden – ultrasound
- WWII – nuclear medicine
- 1957 – Hounsfield – C.T. scan
- 1968 – ERCP

Is there life outside the box?
History and Future of EUS

**Background**
- 1895 – Roentgen – X-rays
- 1913 – 50’s Fessenden – ultrasound
- WWII – nuclear medicine
- 1957 – 1960’s endo/ERCP
- 1972 – Hounsfield – C.T. scan
- 2000 – Thompson/Nuvt – PET/CT

**1980**

**EUS**
- 1980 – Eugene DiMagno
  Lancet: “Ultrasonic Endoscope”

**1980’s**
- Europe

**1990’s**
- USA

1995 – linear ultrasonography (EUS – guided biopsies)
History and Future of EUS

- **EUS**
  - 1980 – “Ultrasonic Endoscope”
    - radial scopes
  - 1980’s – Europe
  - 1990’s – USA
  - 1995 – linear ultrasonography (EUS-guided biopsies)

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- **EUS**
  - 2015 – esophagus/mediastinum
  - Esophageal wall cyst

- **EUS**
  - 2015 – esophagus/mediastinum
  - Metastatic lung CA

- **EUS**
  - 2015 – esophagus/mediastinum
  - Esophageal cancer
History and Future of EUS

- EUS
  - 2015 - esophagus/mediastinum
    - stomach
    - biliary
    - liver

Metastatic breast CA

Lipoma

Primary sclerosing cholangitis

Cholangiocarcinoma

Metastatic pancreas CA

Pancreas adenocarcinoma
History and Future of EUS

- EUS
  - 2015 - esophagus/mediastinum
    - stomach
    - biliary
    - liver
    - pancreas

Pancreas mass

History and Future of EUS

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Pancreas neuroendocrine tumor

History and Future of EUS

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Mucinous cystadenoma

History and Future of EUS

- EUS
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    - stomach
    - biliary
    - liver
    - pancreas
    - other

Adrenal metastasis - lung CA

History and Future of EUS

- EUS
  - 2015 - esophagus/mediastinum
    - stomach
    - biliary
    - liver
    - pancreas
    - other
    - rectal

Gastrointestinal stromal tumor
History and Future of EUS

- EUS - present
  - 2015 - any orifice for superior staging and definitive diagnoses
  - range limited by ultrasound penetrance/length of needle
  - drainage of cysts for diagnosis and therapy (pseudocysts)
  - rendezvous procedure - failed retrograde ERCP (*PTC*)
  - stents - bile duct and gallbladder (*PTC*)
  - elastography to assess lesion “stiffness” (infiltration)
History and Future of EUS

- contrast agents to enhance images
- 3D
- miniaturization
- availability/cost/efficiency
- less dependence on imaging (tumor markers, etc.)
- computer image enhancement; computerized diagnosis
- functional relevance

- development of non-EUS imaging enhancements (e.g. CT colonography)
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Leonard
"Bones" McCoy
Father of Modern Medicine
Age 137