

Role of MRI and Advanced Endoscopic Techniques in PSC

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Techniques

- **MRCP**
- **MR Elastography**
- **ERCP**
 - **Cholangioscopy**
 - **Intraductal US**
- **EUS**

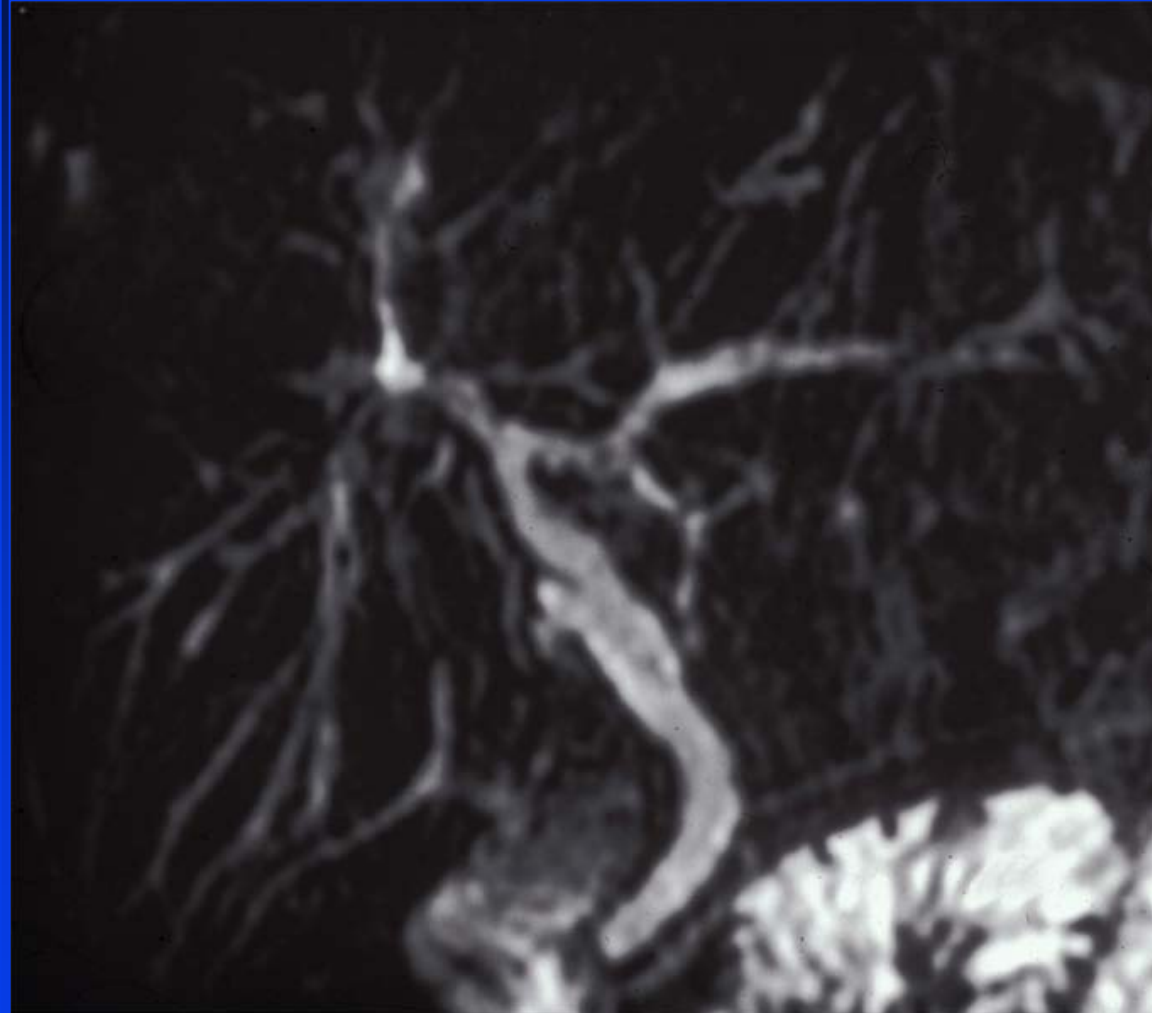
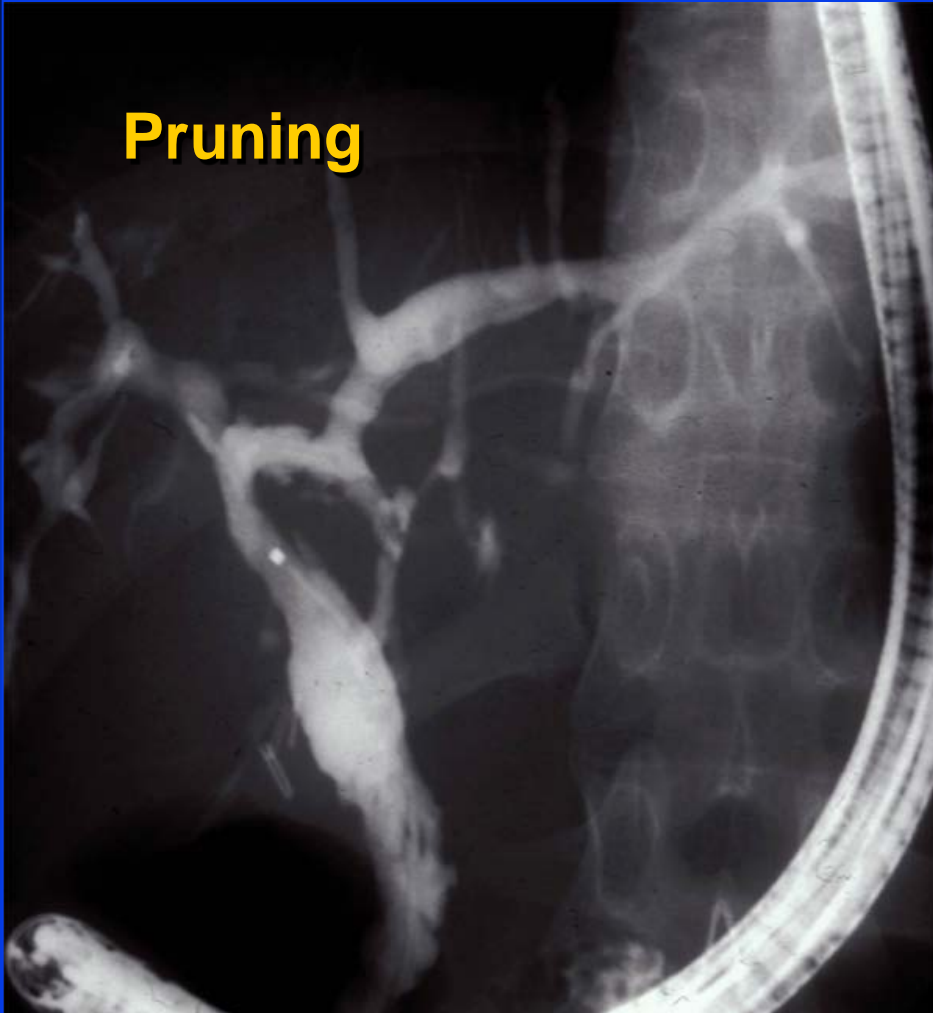
Magnetic Resonance Imaging



- Uses magnetic principles for visual representation of tissue
- No exposure to ionizing radiation
- MRCP began in 1990's
- Can be done without IV contrast

Comparison of ERC and MRC in PSC

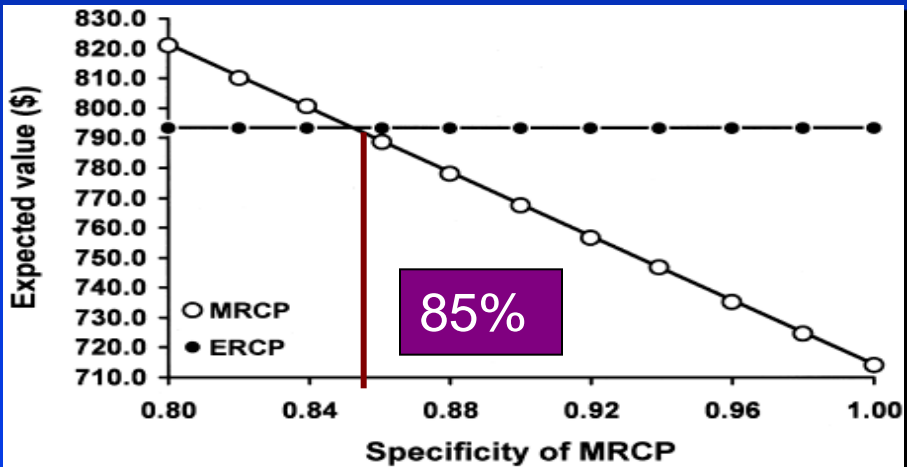
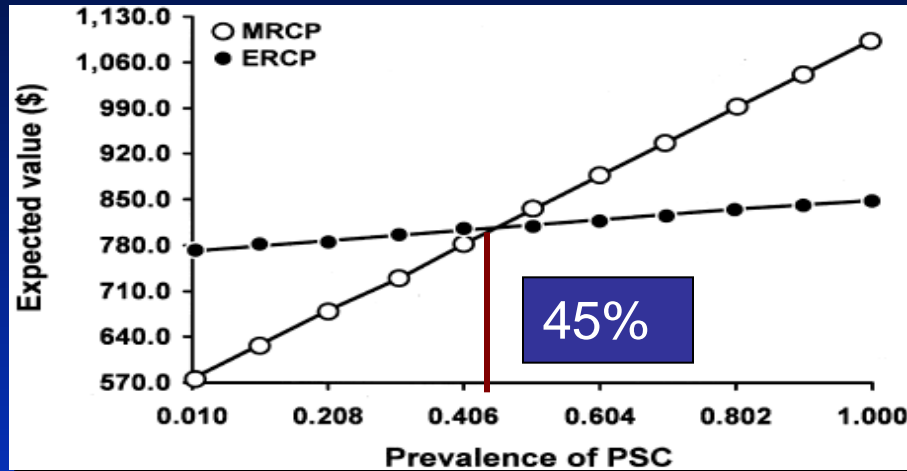
Pruning



Performance of MRCP in the Diagnosis of PSC

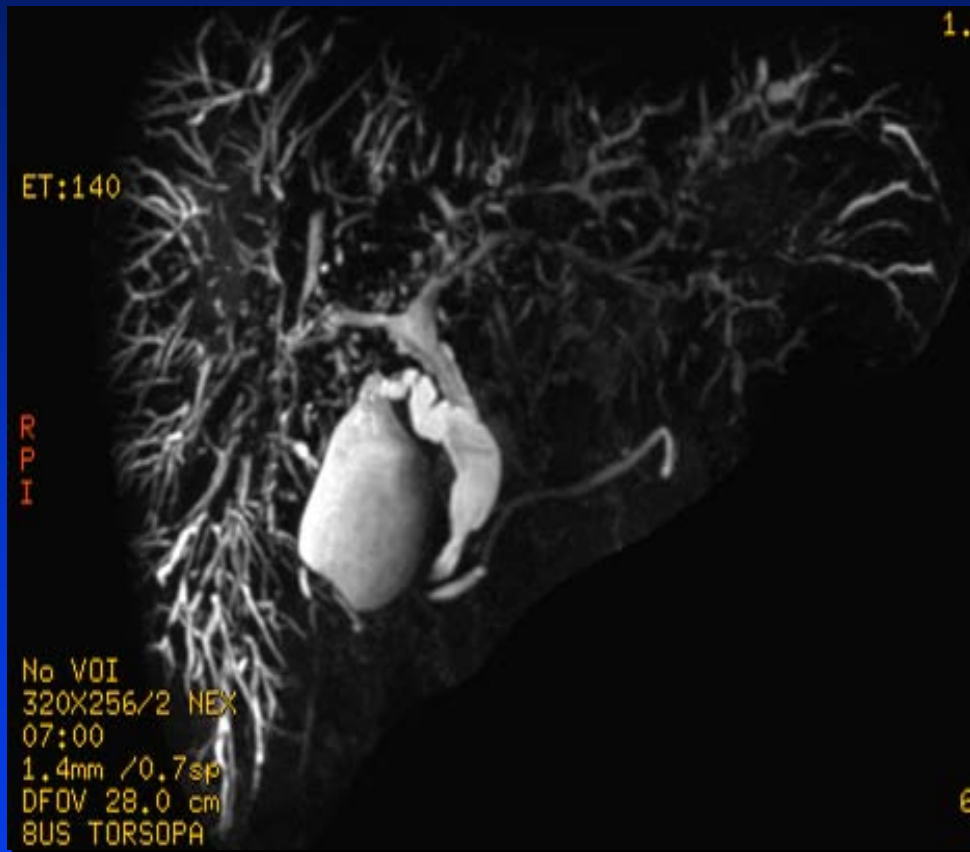
- **Six investigations with 185 PSC subjects**
- **Sensitivity and specificity for PSC detection was 86% and 94% across all studies**
- **In patients with a high likelihood of PSC, MRCP was (+) in those with PSC**
- **In patients with a low likelihood, MRCP was (-) in those without PSC**

MRCP is Cost Effective for Diagnosis of PSC



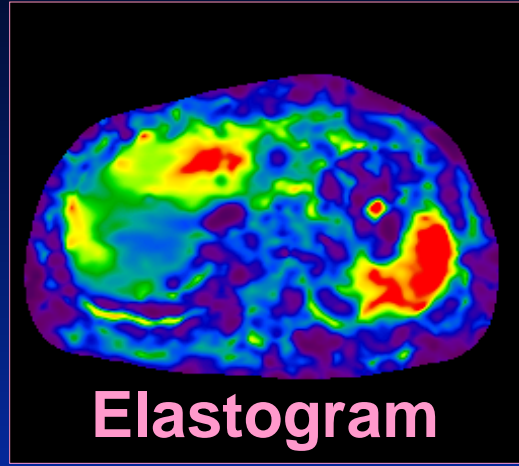
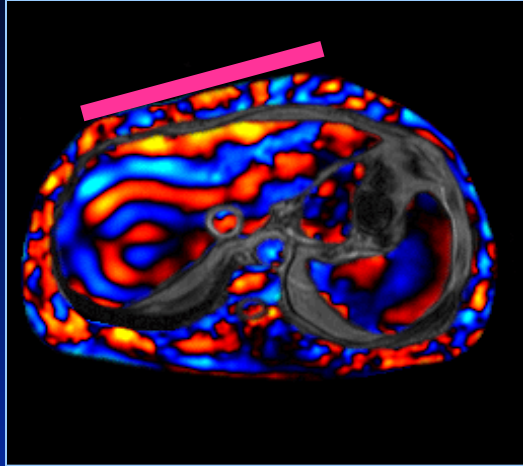
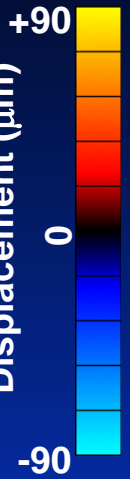
- 73 patients
- Trial of MRCP vs ERCP
- Adjusted for ERCP after negative MRC study
- Cost of ERCP-related complications > \$2900 per diagnosis
- Cost saving with MRCP

Advances in MRCP and Image Acquisition for PSC

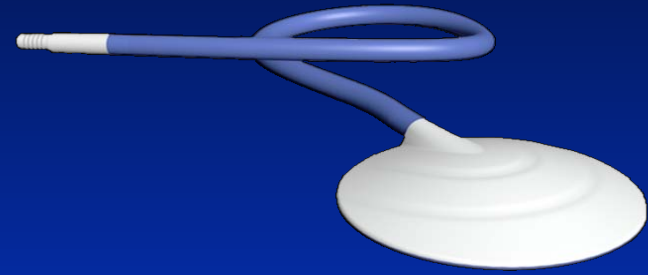


MR Elastography

Displacement (μm)

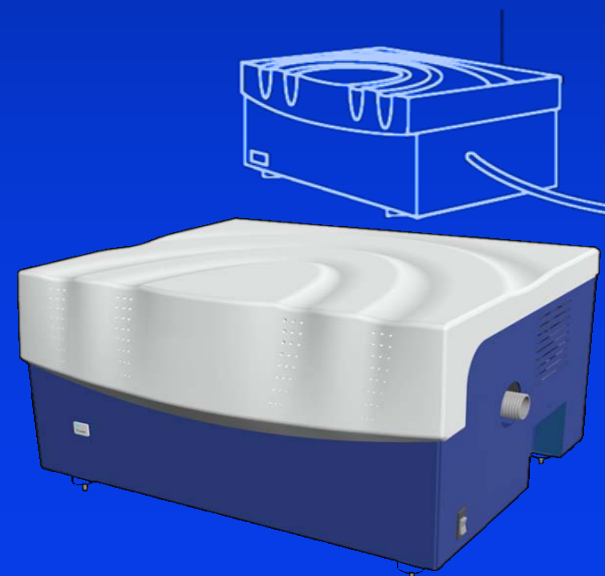


Passive Driver

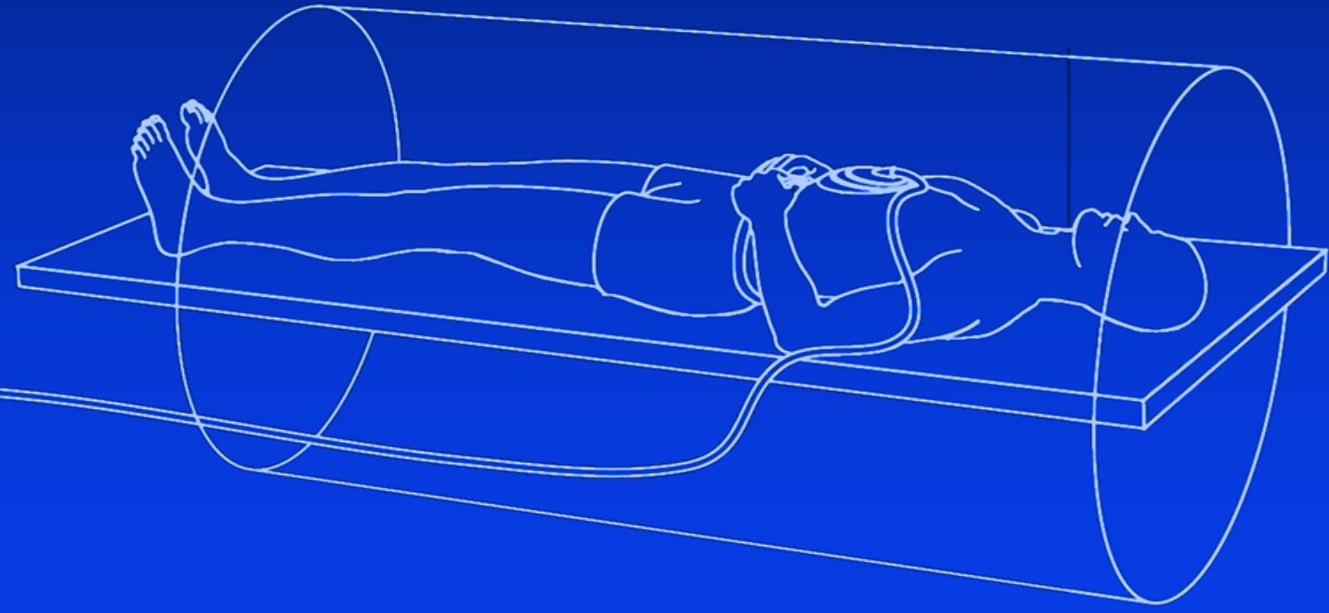


Acoustic waves at 60Hz

Imaging time: 32s



Active Driver



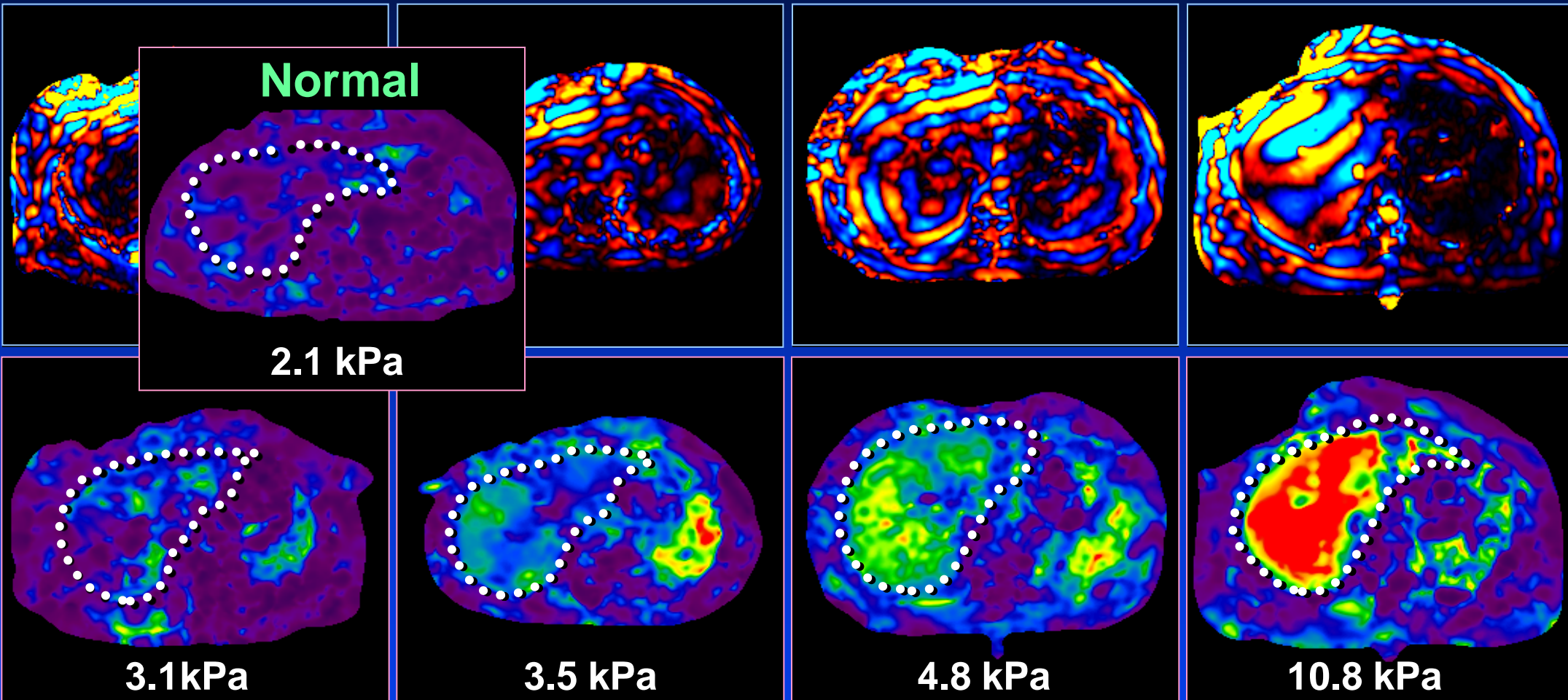
Liver Fibrosis

Biopsy:
Stage F1

Biopsy:
Stage F2

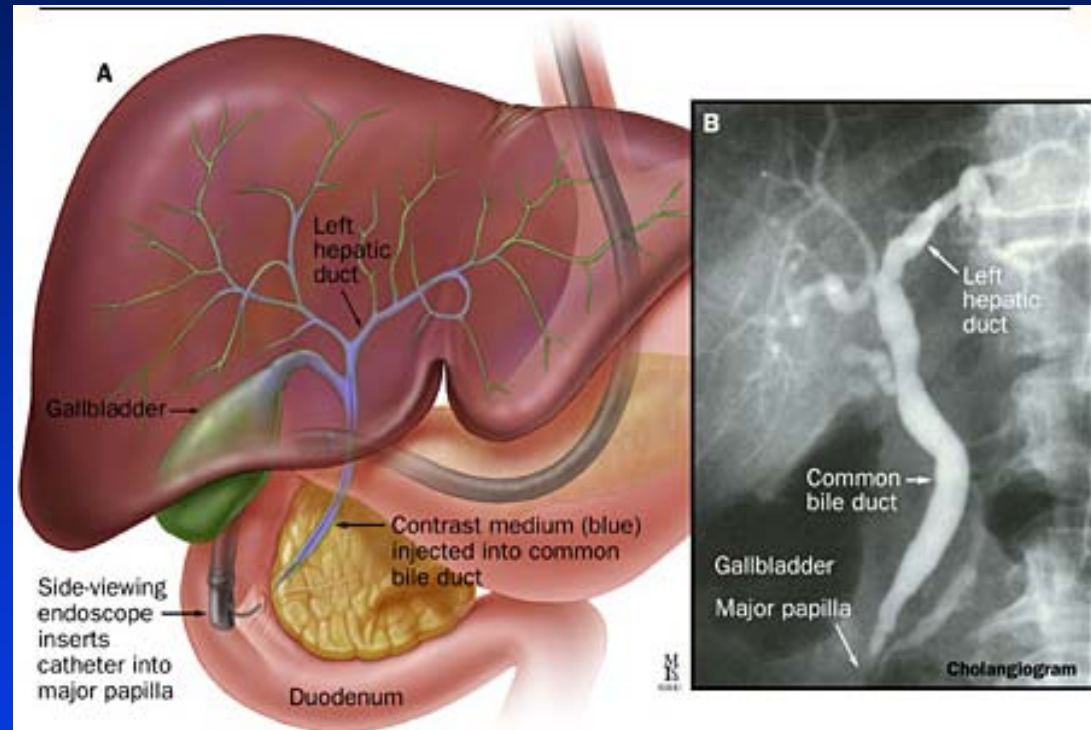
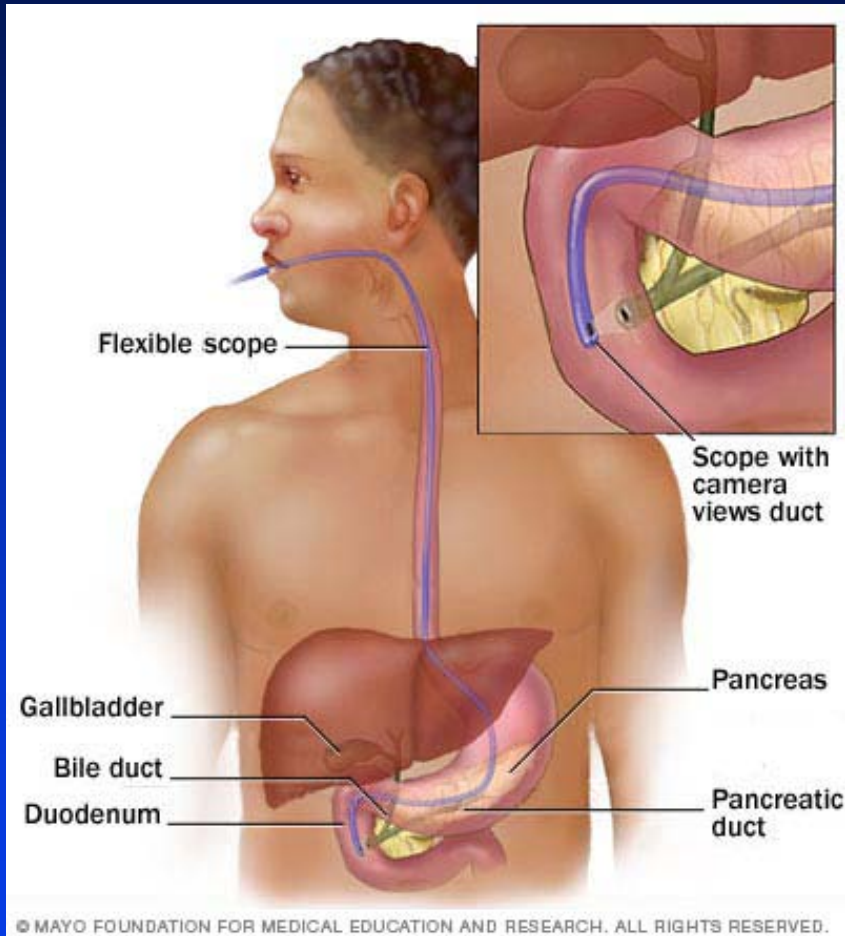
Biopsy:
Stage F3

Biopsy:
Stage F4

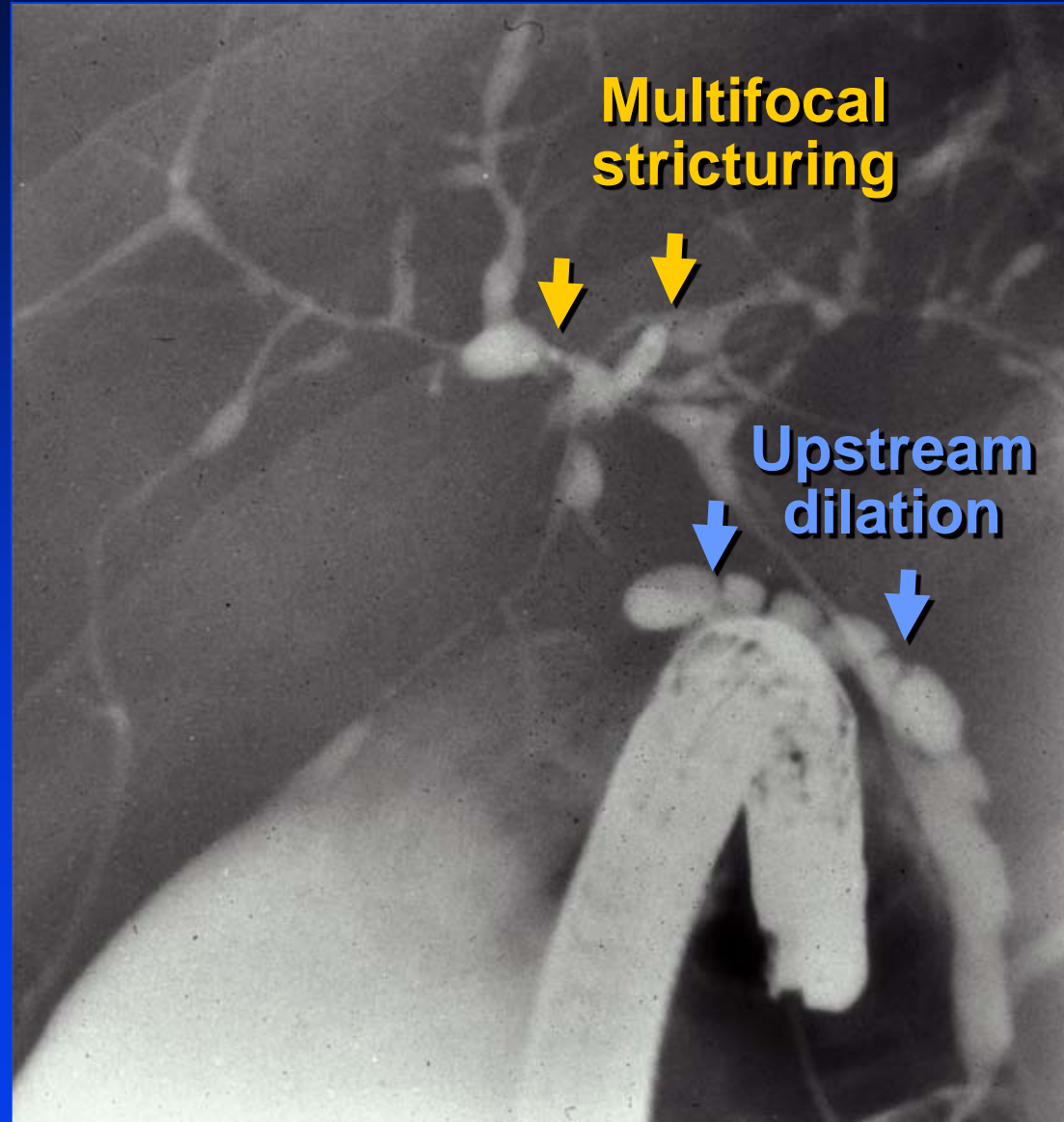


Shear Stiffness (kPa)

ERCP



Classic Case of PSC



Management of Biliary Stricture

- **Cholangitis, pruritus, pain**
- **Dilatation alone with response adequate for dominant strictures**
- **If stenting required, removal +/- replacement in 4-6 weeks preferred**
- **Post-procedures antibiotics**
- **Post-ERCP pancreatitis 1-5%**

Cholangioscopy

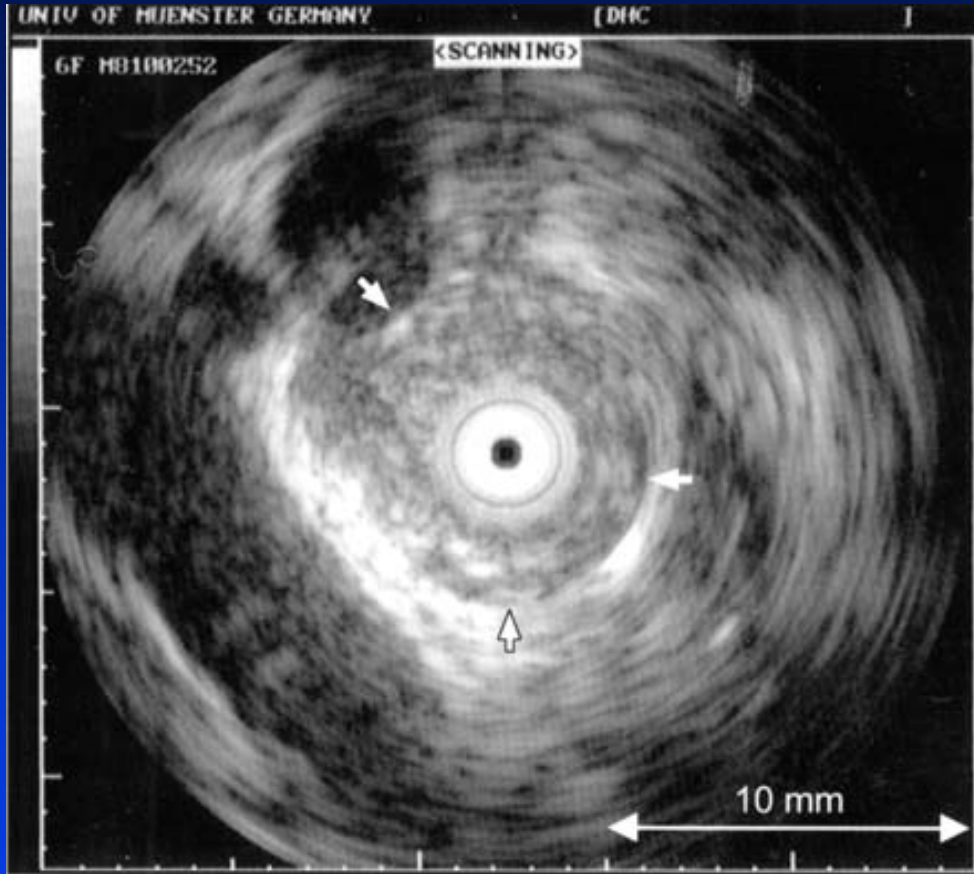


- Advent in mid-1970's
- Vast improvements by 2000
- Single vs dual operators
 - Spyglass (single)
- Some with NBI capability
- Primary use for treating difficult bile duct stones and assessing biliary strictures

Potential Role for Cholangioscopy in PSC

- **High sensitivity for detection of malignant lesions are reported yet definitions are lax.**
 - **often achieved at the cost of lower specificity**
- **Value of targeted biopsy under direct visualization remains uncertain**
 - **well-designed studies are needed**

Intraductal Ultrasound

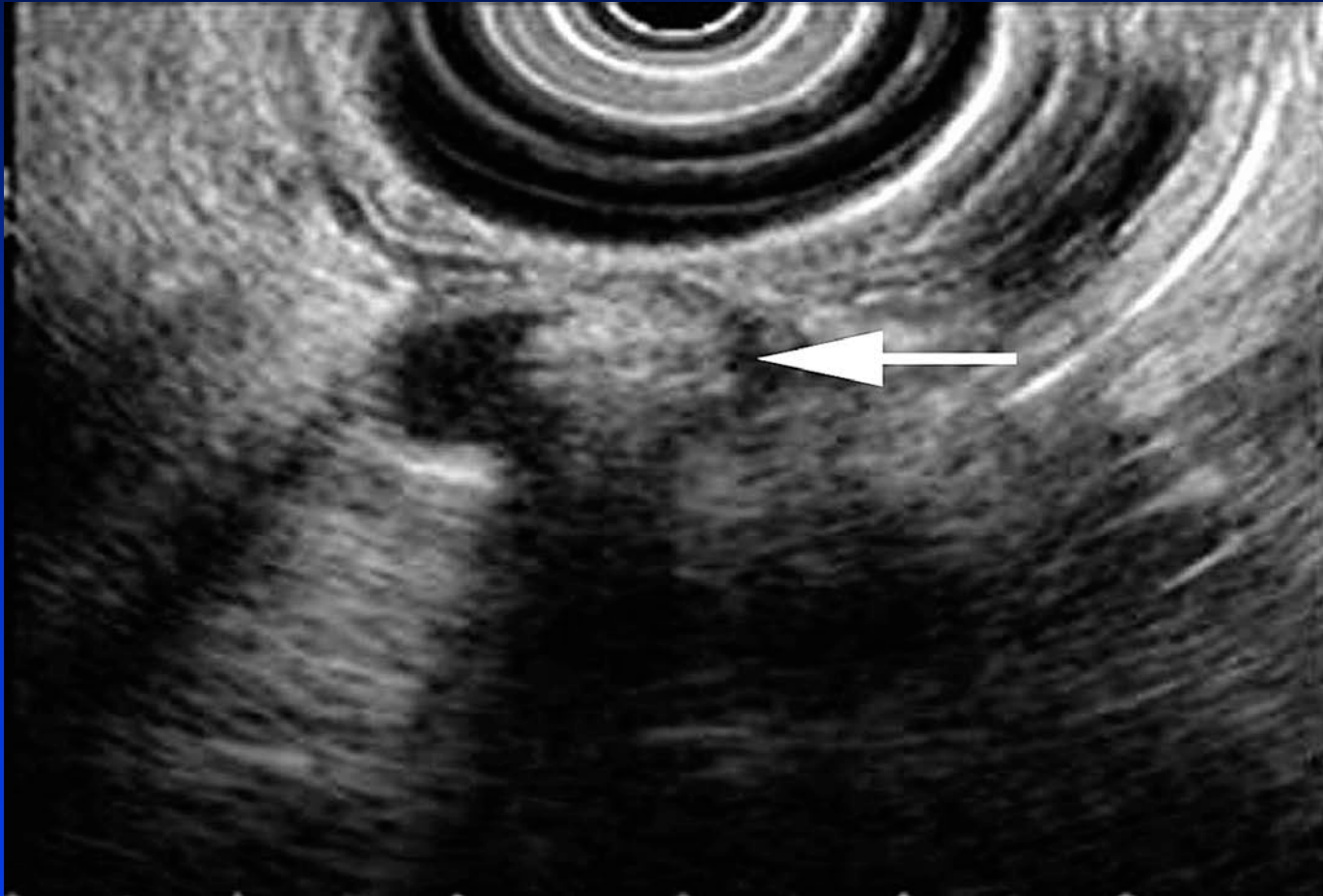


- 86 patients with indeterminate biliary strictures (n=34)
- Negative cytology and histology in 21 pts
 - Accuracy of IDUS was 86% overall
 - Accuracy of IDUS was 89% in PSC

Endoscopic Ultrasound (EUS)

- **First introduced into clinical practice in 1980**
- **Radial and linear echoendoscopes**
 - **Linear for FNA**
- **Main uses for pancreatic disease, submucosal lesions, staging of GO malignancy, and biliary tract eval**

Common bile duct calculus (arrowed) casting an acoustic shadow



Role of EUS in PSC

- **Exclude choledocholithiasis**
 - Esp. if imaging is inconclusive
- **Evaluate unexplained lymph nodes**
 - Typically benign in PSC
- **Staging of CCA**
 - FNA of lymph node
 - Exclude vascular involvement
- **Needle aspiration of stricture to rule out CCA is not recommended**

--- Thank you ! ---

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