Montefiore
THE UNIVERSITY HOSPITAL

EINSTEIN
Albert Einstein College of Medicine

Open Common Bile Duct Exploration

Peter Muscarella II, MD

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Disclosures

- None

Overview

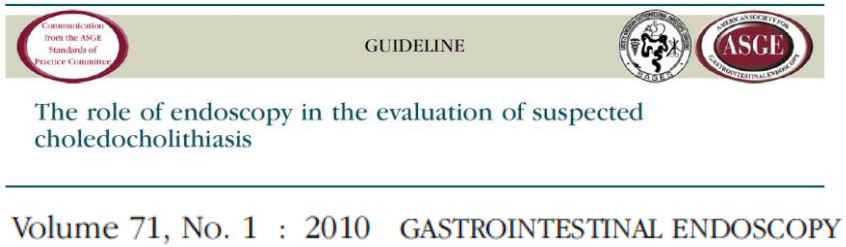
- Common bile duct (CBD) stones are identified in 10 to 15 percent of patients undergoing surgery for symptomatic cholelithiasis
- CBD stones should be removed surgically or endoscopically to prevent further complications:
  - acute suppurative cholangitis
  - obstructive jaundice
  - hepatic abscess
  - acute pancreatitis
- Diagnosis should be suspected based on labs, symptoms, and imaging findings

Options for Management

- Endoscopic therapy
  - ERCP (EUS useful adjunct)
  - Transgastric laparoscopic-assisted ERCP
  - Rendezvous procedure
- Surgical therapy
  - L/S CBD exploration
    - Transcystic
    - Transductal
  - Open CBD exploration
- Percutaneous management
  - Cholangitis not candidate for ERCP
  - Not candidate for surgical or endoscopic management

Predictors of Choledocholithiasis

- Very strong predictors
  - CBD stone on U/S
  - Acute cholangitis
  - Serum bilirubin >4 mg/dL
- Strong predictors
  - Dilated CBD on U/S (>6 mm GB *in situ*)
  - Serum bilirubin 1.8-4.0 mg/dL
- Moderate predictors
  - Abnormal liver biochemistry other than bilirubin
  - Age >55
  - Clinical history of gallstone pancreatitis



Risk Stratification

	High	Intermediate	Low
Criteria	One or more very strong predictor **and/or** both strong predictors	One or more strong predictors **and/or** one or more moderate predictors	No predictors
Risk of CBD Stones	>50%	10-50%	<10%
Additional evaluation	ERCP	1) MRCP or EUS with ERCP as indicated 2) Proceed to surgery	None
Surgical treatment	Cholecystectomy	1) Cholecystectomy 2) Cholecystectomy + IOC/LS CBDE	Cholecystectomy/IOC as indicated

Case Presentation

- 60 female with multiple medical problems including Hepatitis C
- Pruritis and dark urine in 2016
- LFTs – AP 987, AST 171, ALT 225, TB 3.4, DB 1.5
- RUQ US – cholelithiasis and dilated duct, c/w choledocholithiasis

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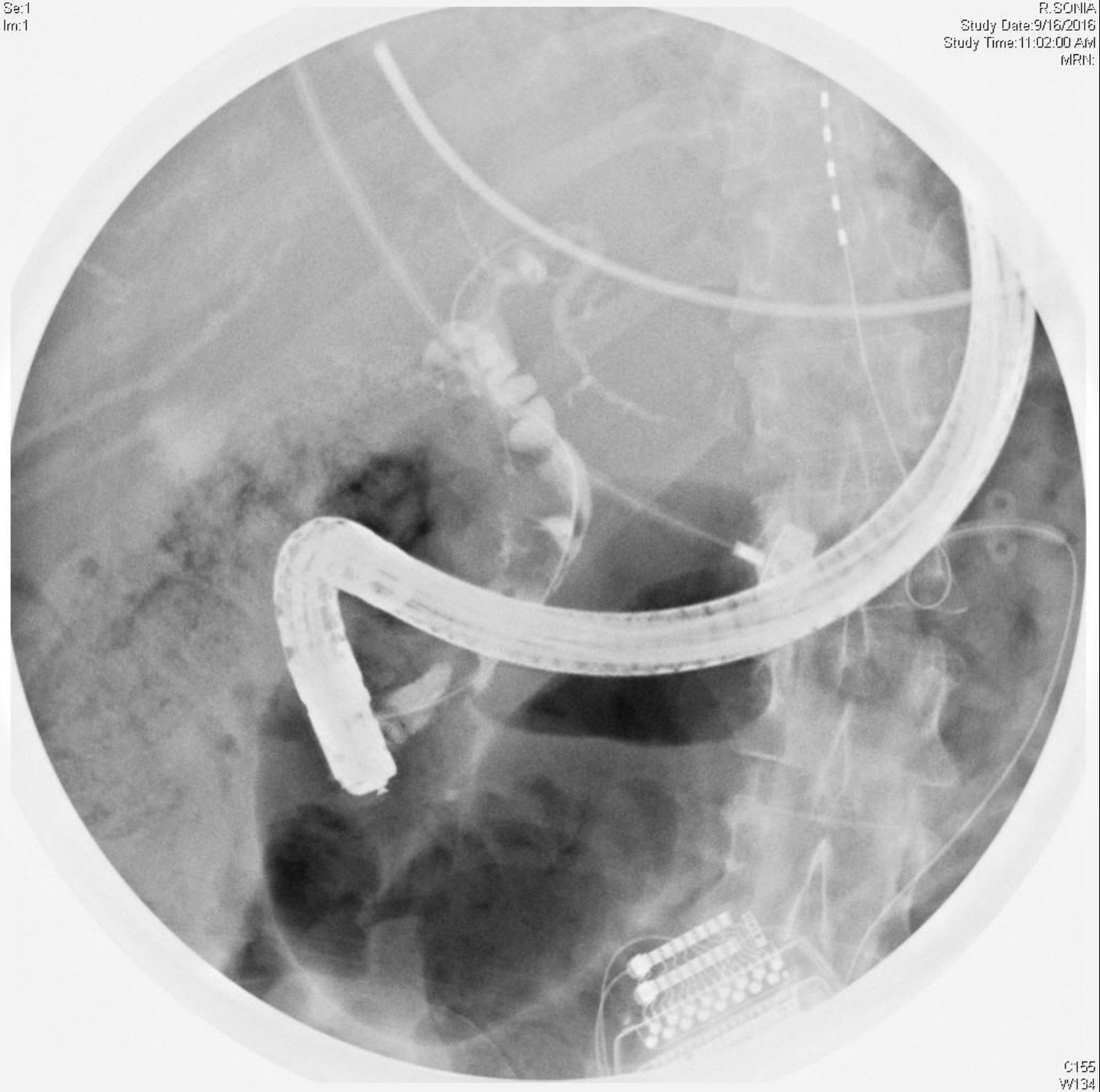

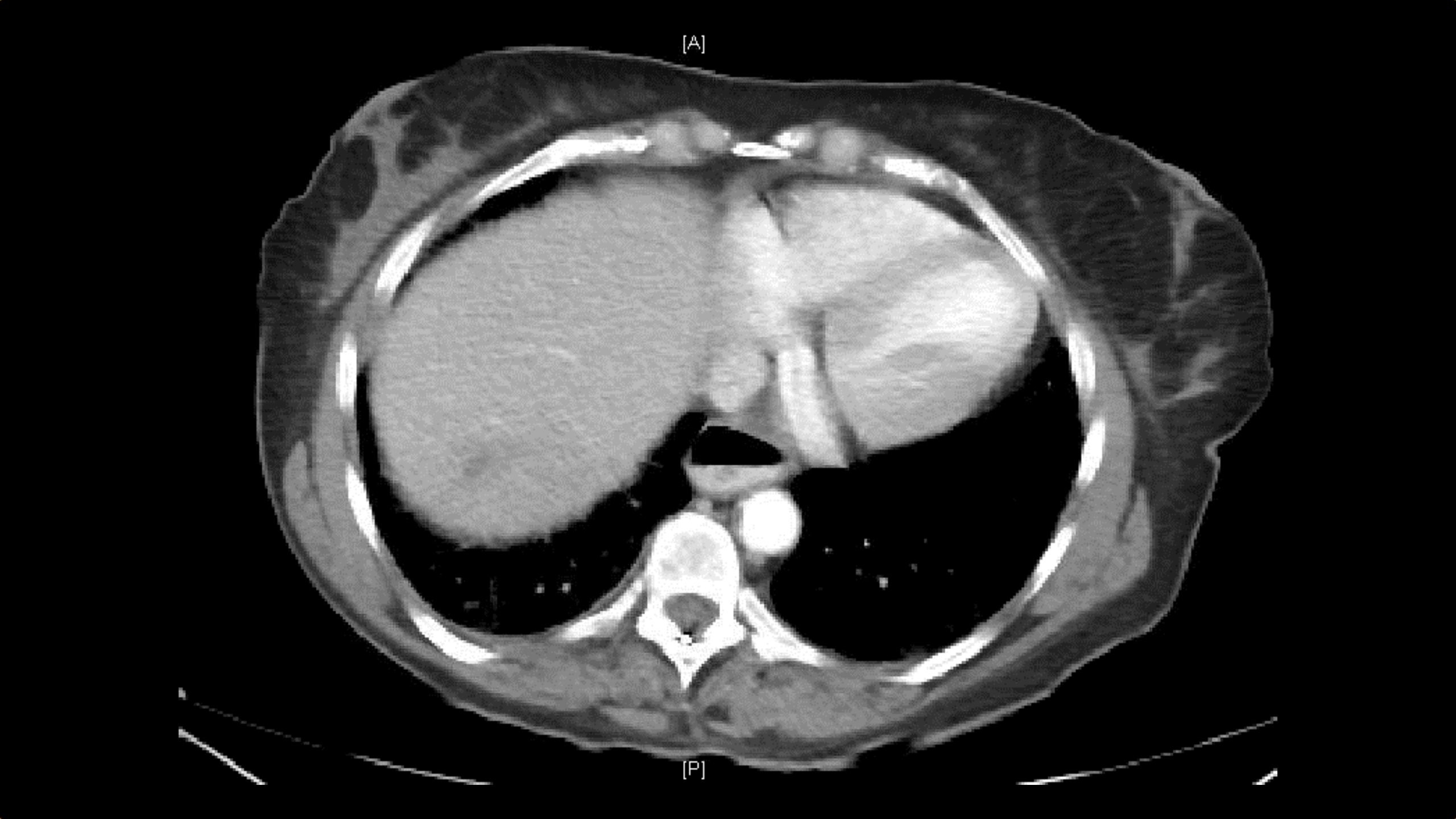
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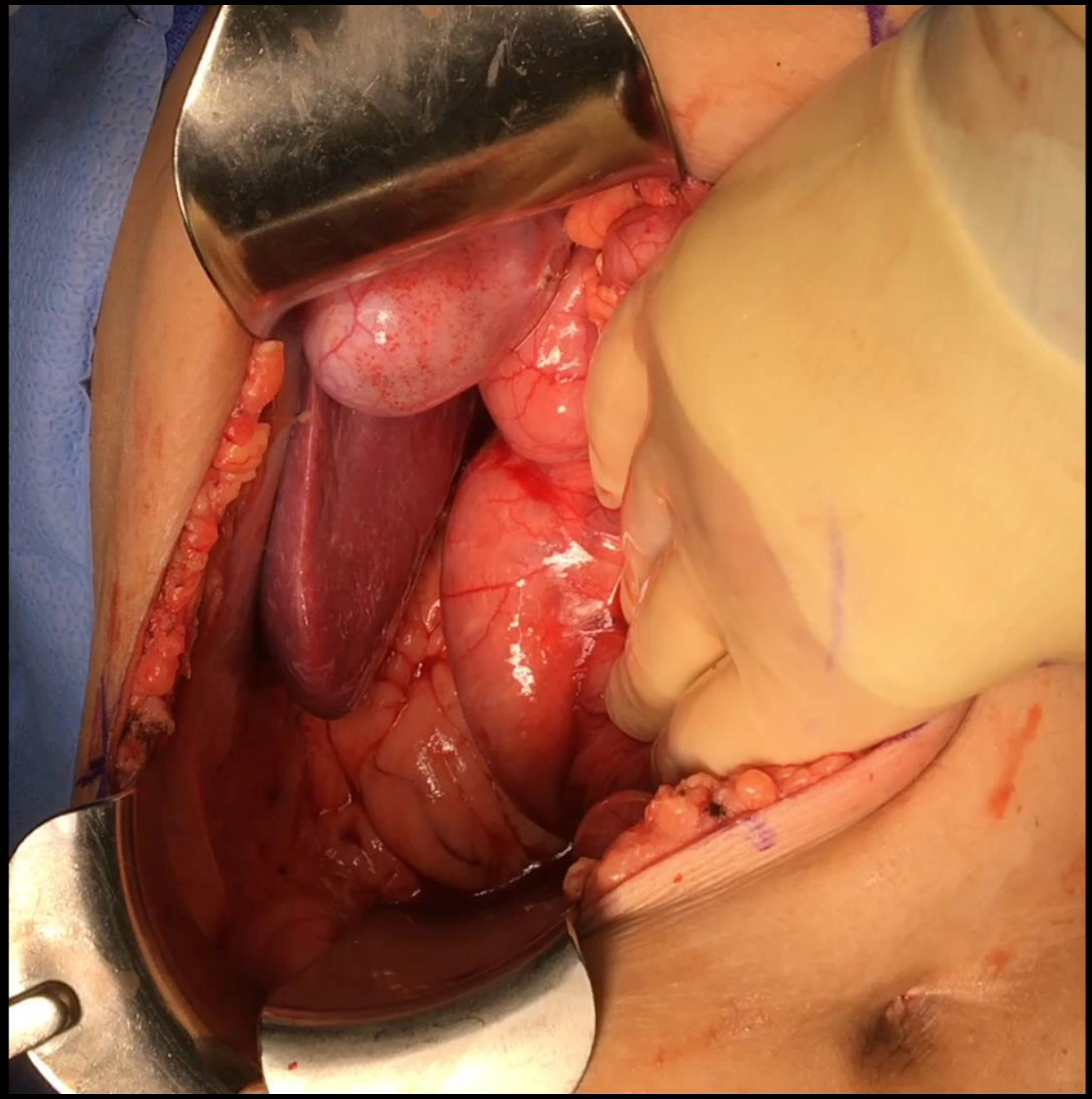
Case Presentation

- ERCP – removal of stone fragments, large impacted stone not extracted (stent placed)
- GI recommended consideration for additional attempts at endoscopic management
- Patient was reluctant to undergo further endoscopic treatment
- Surgical consultation requested



Indications for Open CBD Exploration

- Open cholecystectomy + CBD stones
- Failed or complicated laparoscopic approach
- Clinical scenarios
  - Severe inflammation in triangle of Calot
  - Impacted stones
- Limited laparoscopic equipment, experience, and/or resources

Techniques for stone removal

- Manual manipulation
- Forceps
- Saline irrigation
- Fogarty catheter with balloon
- Wire basket
- Choledochoscopy

Case Presentation

- 54-year-old female with previous medical history significant for clinically severe obesity for which she underwent a Roux-en-Y gastric bypass in 1998
- L/S Cholecystectomy 2001
- Surgically-assisted transgastric ERCP for choledocholithiasis in 2008
- Now presents with a two day history of abdominal pain
- No signs of infection, abdomen benign
- Labs normal except for ALP 264 Bili 0.6/0.4

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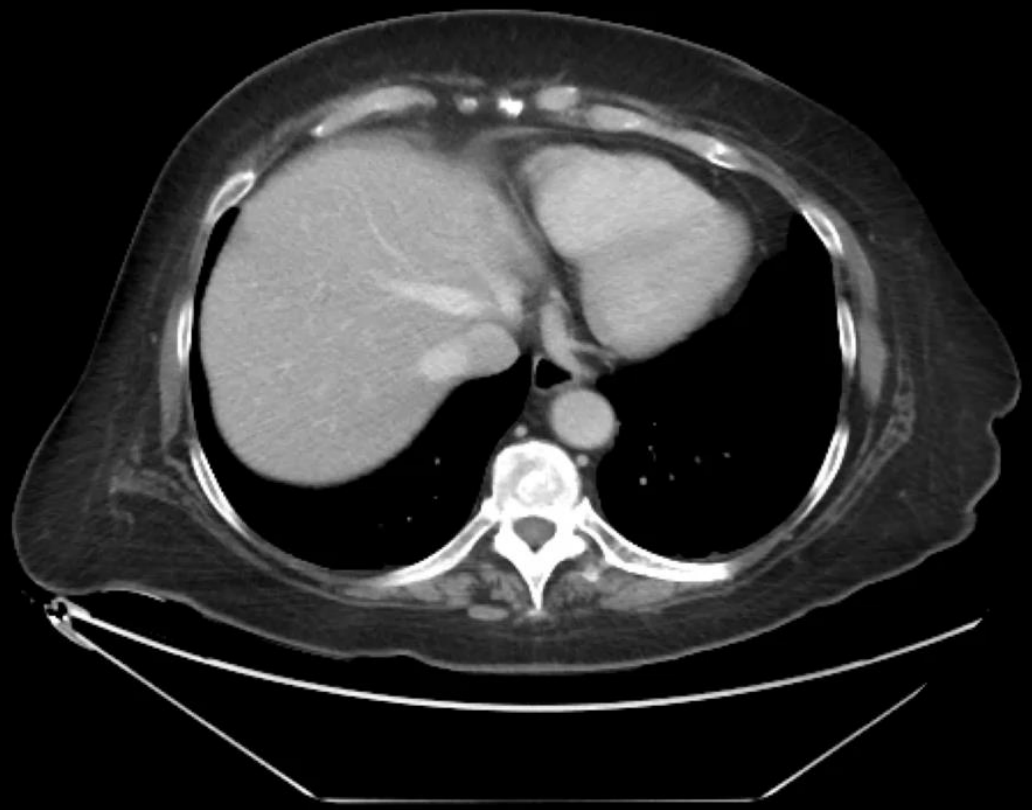

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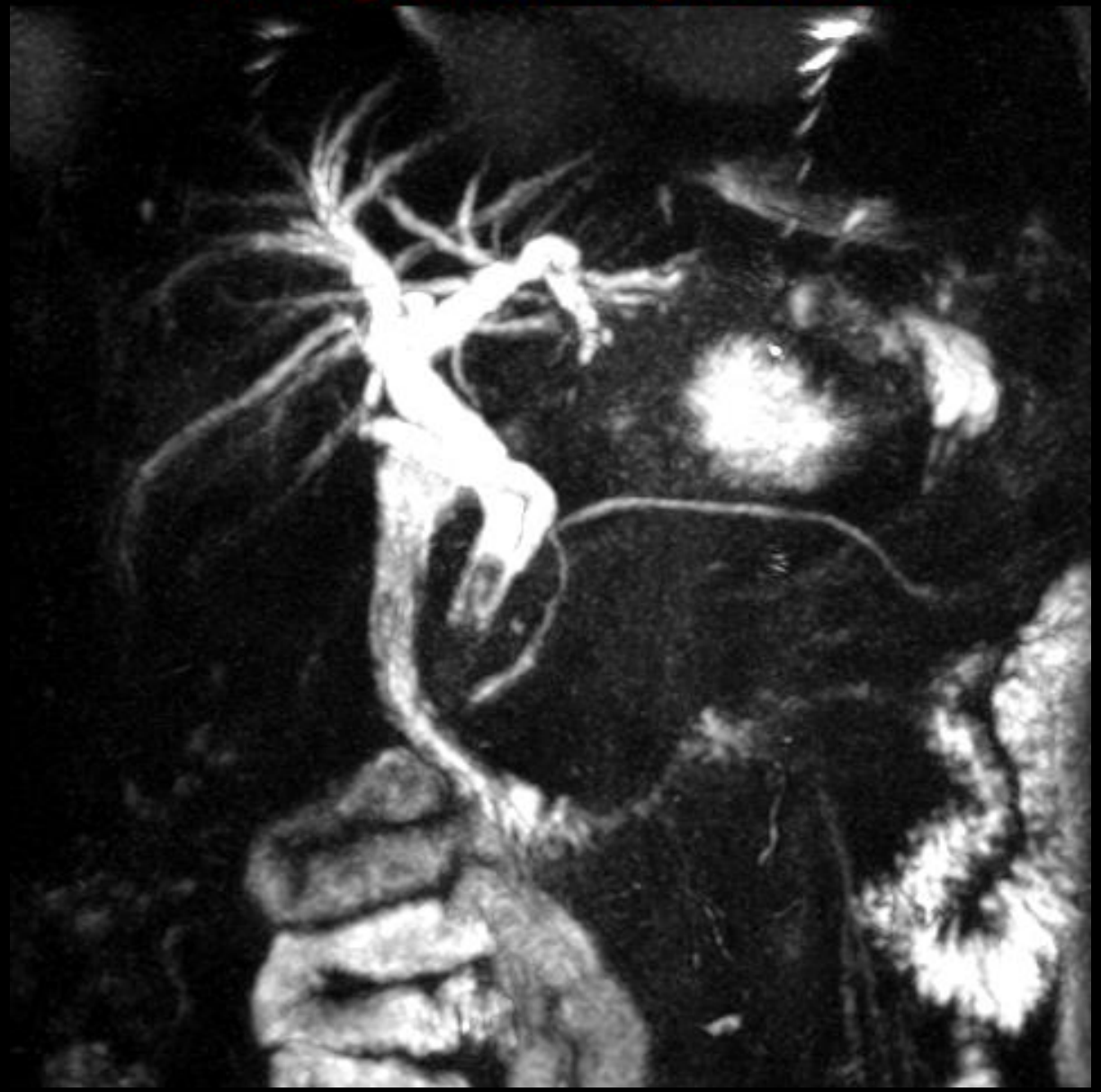
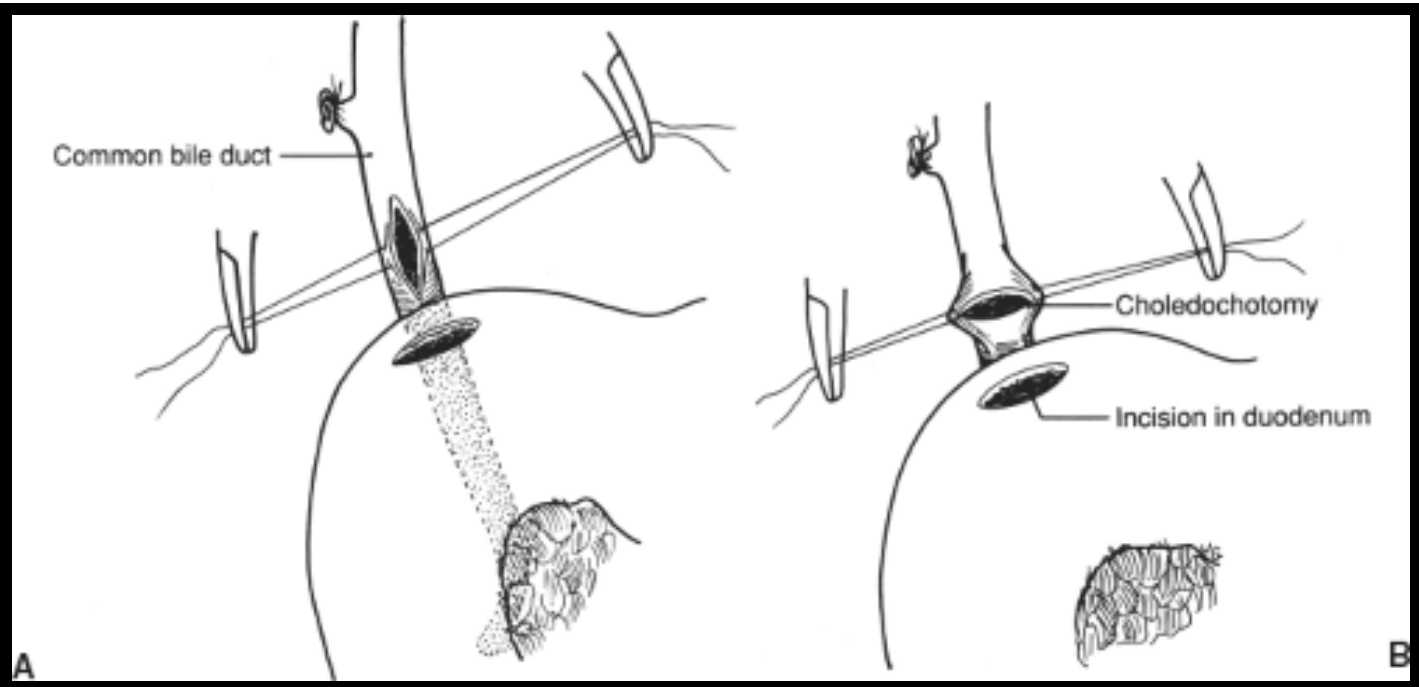
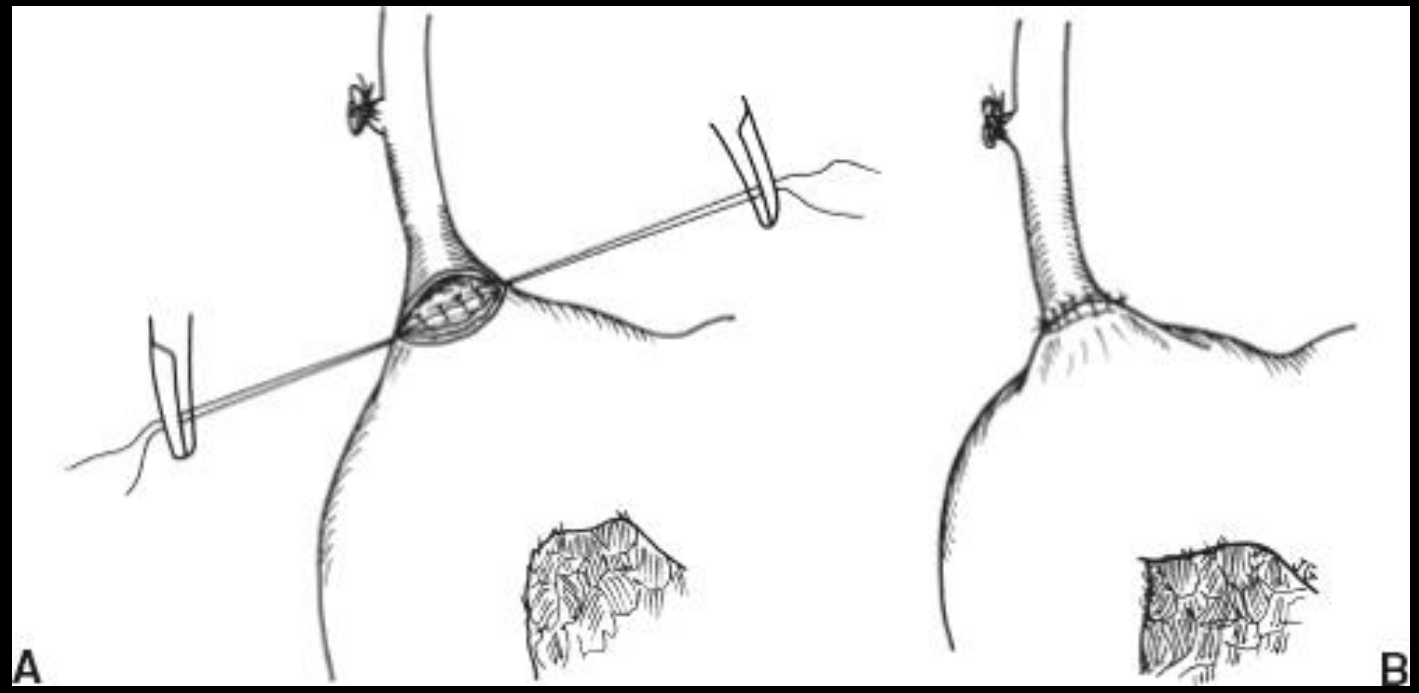


Case Presentation

- Ultrasound, CT and MRCP all demonstrated a dilated CBD 11 mm with calculi measuring 1.2 x 0.6 cm in the distal CBD
- GI consultation was obtained
  - Transgastric ERCP
  - CBD Exploration
- Surgical exploration
  - Open common bile duct exploration
  - Stones and debride flushed and removed
  - Choledochoscopy confirmed duct clearance
  - Choledochoduodenostomy

Choledochoduodenostomy





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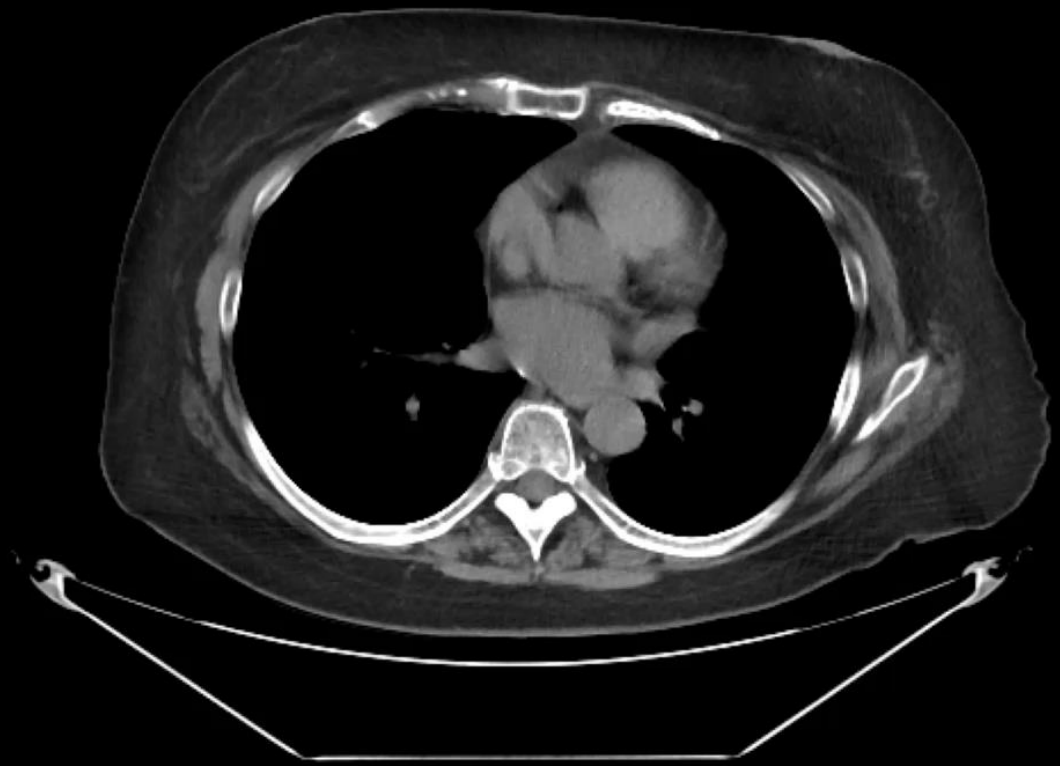


Annals of the Royal College of Surgeons of England (1974) *vol* 55

ASPECTS OF TREATMENT*

Technique of transduodenal exploration of the common bile duct

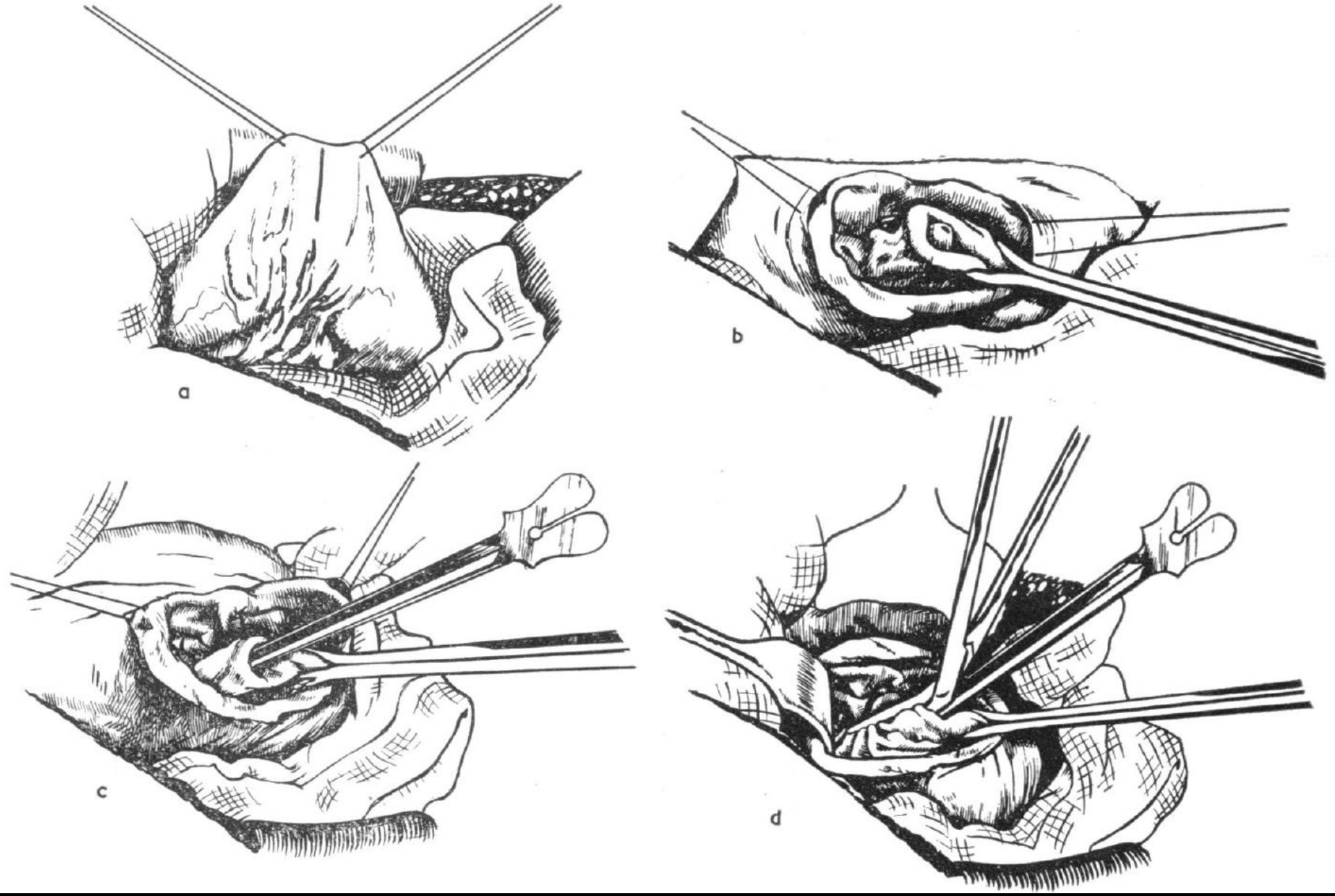
Duodenoscopic appearances after biliary sphincterotomy

A L G Peel FRCS

J Hermon-Taylor MChir FRCS

H D Ritchie ChM FRCS

Surgical Unit, The London Hospital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Post Operative Management

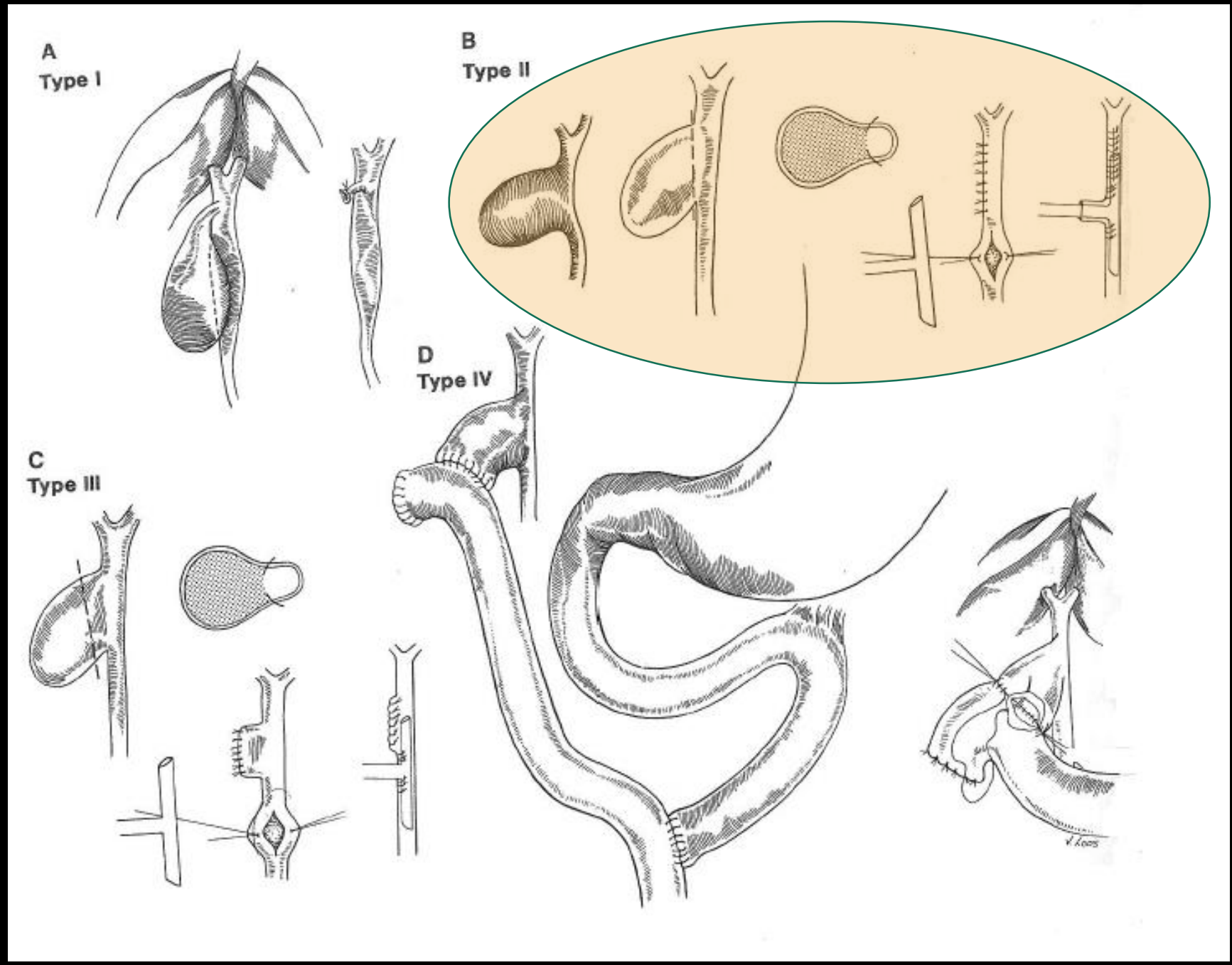
- Consider early drain removal
  - Low output
  - Nonbilious
  - Clinically stable
- Monitor LFTs
  - May take several days to weeks to normalize
- Clamp T-tube at discharge
  - Flush
  - Dressing changes as needed
- Consider outpatient T-tube removal after 4 weeks
- Prior to T-tube removal
  - T-tube cholangiogram
  - LFTs

Complications

- Symptoms:
  - Fever
  - Leukocytosis
  - Persistent pain
  - Bile leakage around T-tube or through drain
  - Jaundice
  - Rigors
- Radiologic workup
  - U/S vs CT
  - T-tube cholangiogram
- Diagnosis:
  - Bile duct leak (2-6%)
  - Subhepatic abscess (0.7%)
  - Retained stones (3-6%)

Case Presentation

- 82-year-old male with multiple medical problems who presented with abdominal pain and pancreatitis
- CT showed focal acute interstitial edematous pancreatitis and porcelain gallbladder
- Ultrasound contracted gallbladder with mural calcification and/or cholelithiasis, normal CBD
- LFT’s normal
- Pancreatitis resolved and he was reluctant to undergo surgery, but developed intermittent episodes of RUQ pain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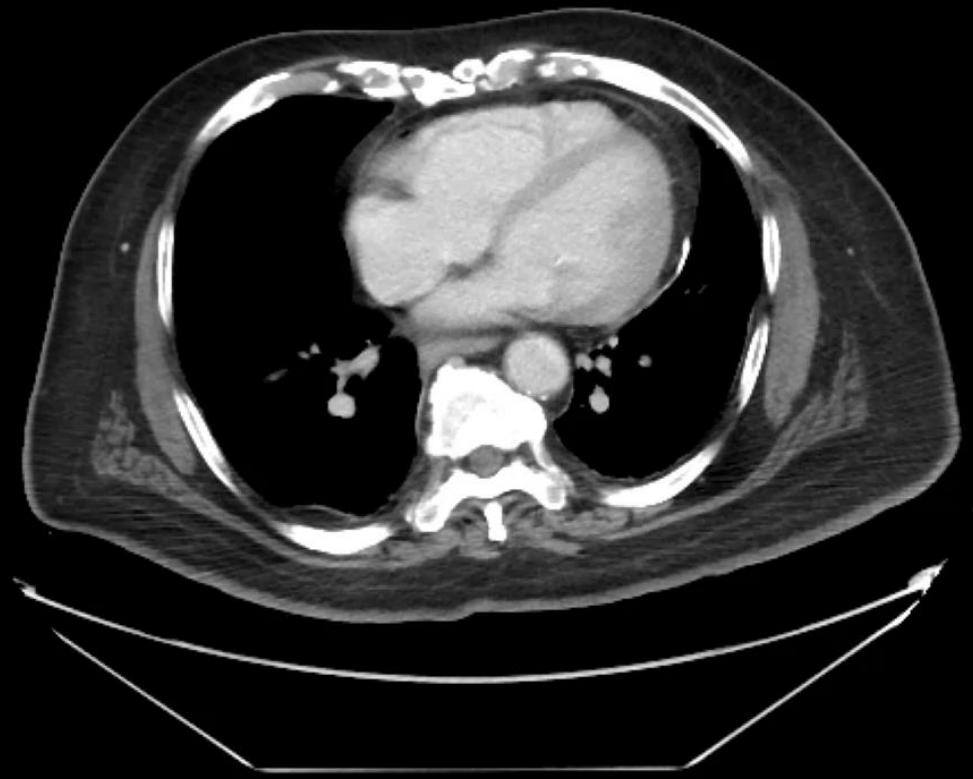

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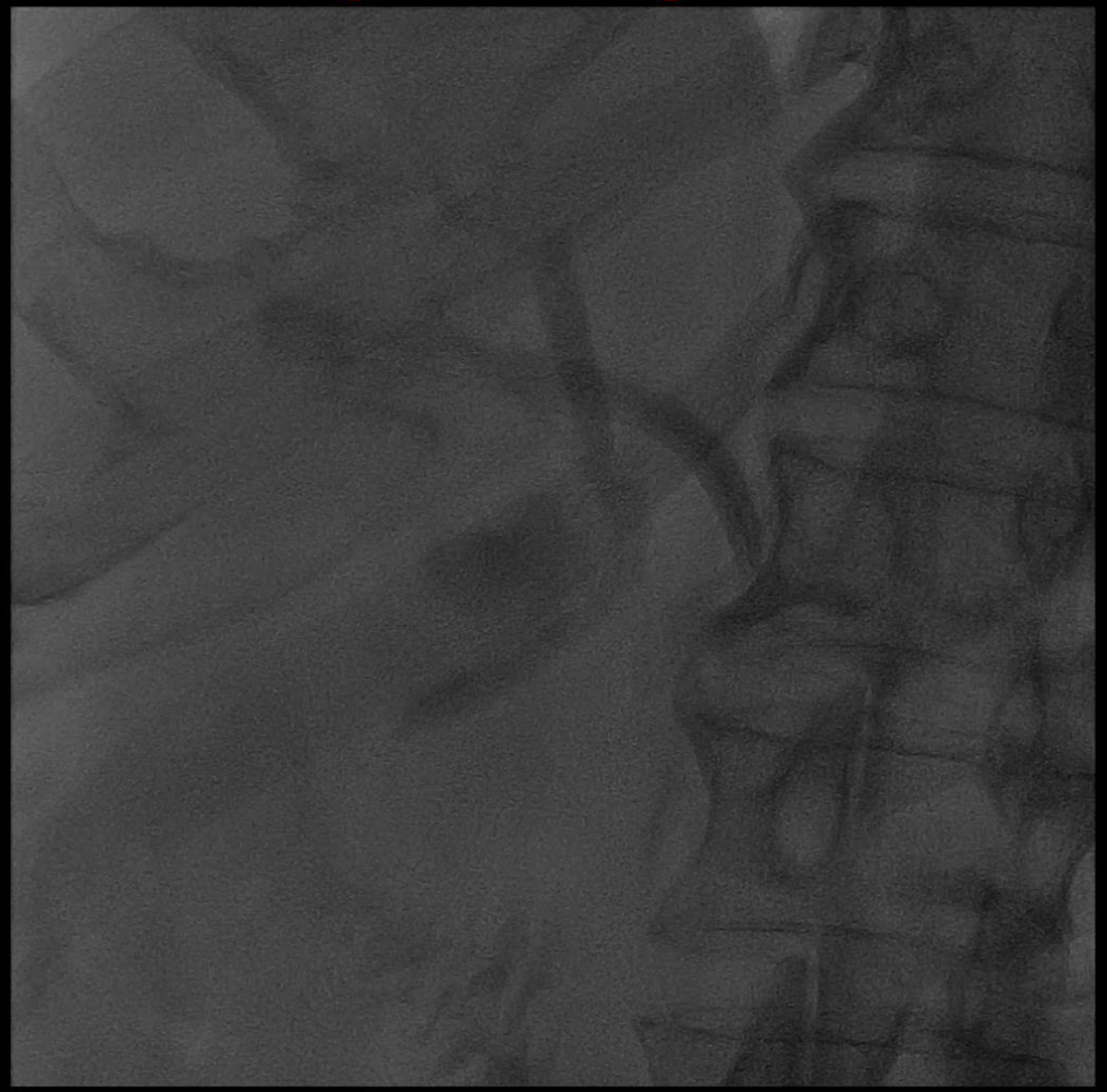

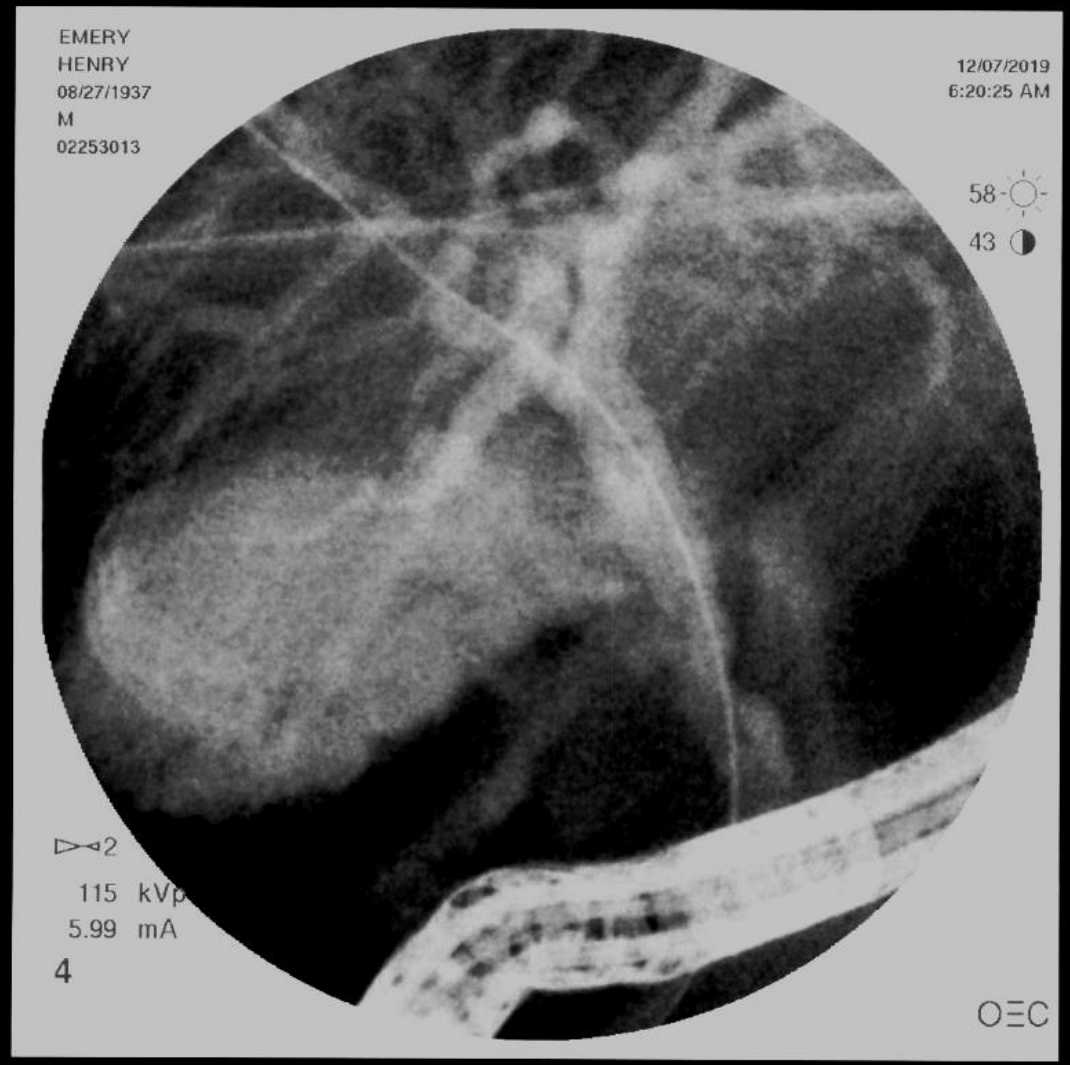

Conclusions

- Choledocholithiasis is a relatively common disorder encountered in our patient population
- Risk stratification can be useful for determining appropriate imaging and intervention in suspected cases
- Endoscopic management is currently the standard procedure for managing CBD stones
  - Abnormal anatomy can make ERCP more difficult or impossible
  - Recent data suggest that there may be benefit to L/S CBDE for intermediate risk patients
- Numerous complex procedures can be utilized, but all surgeons who perform cholecystectomy should be familiar with the technique of open CBD exploration