Introduction to ERCP

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You’ve never had this much fun in endoscopy……it’s addictive!!

Basic set up for the procedures

Indications and applications
for ERCP/ manometry and luminal stenting

Pancreatobiliary emergencies

Set up for the Procedure

Fluoroscopy room

- Ionizing radiation is low, protect thyroid/gonads. Ok to be pregnant with wrap around aprons
- Two piece aprons protect c-spine
- Radiology techs present if needed/not radiologist
- Use bucky flaps and image intensifier, C-arm less optimal due to higher radiation exposure

Personnel in ERCP

- Conscious sedation nurse/patient monitor can also be the airway monitor
- Endoscopist (primary operator)
- Assistant (handles the accessories) Can be a technician, LPN, RN, fellow, other MD, etc.
- X-ray technologist (if needed)

Accessory Equipment

- Short wire platform favorable (KRUEGER LOVES IT)
- Catheters (how you get in)
- Wires (nitinol, metal with memory)
- Stents (plastic = temporary and self-expanding metal for malignant strictures can be permanent and some are removable
- Baskets/balloons/lithotripters for stones

Talk to the Patient ***YOURSELF*** Before the Procedure

- Informed consent/complications:
  - Pancreatitis rate 5%, severe pancreatitis =death, diabetes, disability ($$) rate 1%*****
  - Perforation rate low ,1%
  - Bleeding requiring intervention 1%
  - Infection rare, use sterile water in bottles, antibiotics for PSC, areas not drained, pancreatic pseudocysts

ERCP Informed Consent and Ways to Reduce Pancreatic Injury

- Review with the patient and their family the risks, benefits, alternatives. Don't say "everything is going to be OK" Do say, this is a serious surgery, with potential for death 1%, diabetes, disability, need to stay in the hospital or have additional surgery Compiled risks about 5%, 95/100 go home the same day. Give them time to ask questions, ask them to repeat what you have said
- Risks reduced with temporary pancreatic stenting, softwire cannulation, and rectal indomethacin. 100mg, antibiotics in select cases (pseudocysts, cholangitis, failure to drain strictured areas). Removing contrast or abx mixed in might be helpful, no compelling data.

More on Bleeding Risk and Endoscopy Procedures

HOLD aspirin/plavix/factor X inhibitors 7d and coumadin 5d prior for: sphincterotomy, esophageal dilation, self-expanding stents for CA, liver biopsy/fine needle aspiration during EUS (if doubt, ask the endoscopist)

Controversial for: Large or multiple

polypectomies, PEG, argon plasma coagulation (depends on how much area to treat)

No need to hold for: placement of small plasitc stents for drainage, polyps<1cm, few mucosal bx's

**Use clips prophylactically, less risk than cautery

Sedation of the ERCP patient: Just say NO to movement

Getting started:

Nasal cannula 02 at 4L/min

Demerol 50, Versed 2, Benadryl 25-50mg

At two minutes, Demerol 25, Versed 1-2mg

Once scope is in place in D2:

Versed 1mg q 5 minutes, *give limits

or, Valium 2.5mg every ten minutes

*Greater use of MAC anesthesia (though probematic for manometry as the medications confound results)

Indications for ERCP/Manometry

ERC/mano

Define anatomy
Dilate strictures
Remove stones
Cytology
Confirm SOD or papillary stenosis

ERP/mano

Define anatomy
Dilate strictures
Place temporary stents
Cytology
Confirm SOD or Papillary stenosis

SO Manometry

Readings Unreliable if Drugs on Board:

Nitrates, beta blockers, ca blockers, antihistamines, phenergan, fentanyl, propofol, valium. Hold for 12 hours beforehand ***Ok** to use up to 100mg demerol and as much versed as you like during the case

Manometry is useful to confirm and treat:

Type II - pain plus transient elevated enzymes or dilated duct

Manometry is unnecessary for:

Type I – papillary stenosis and now no longer recommended for Type III – pain only

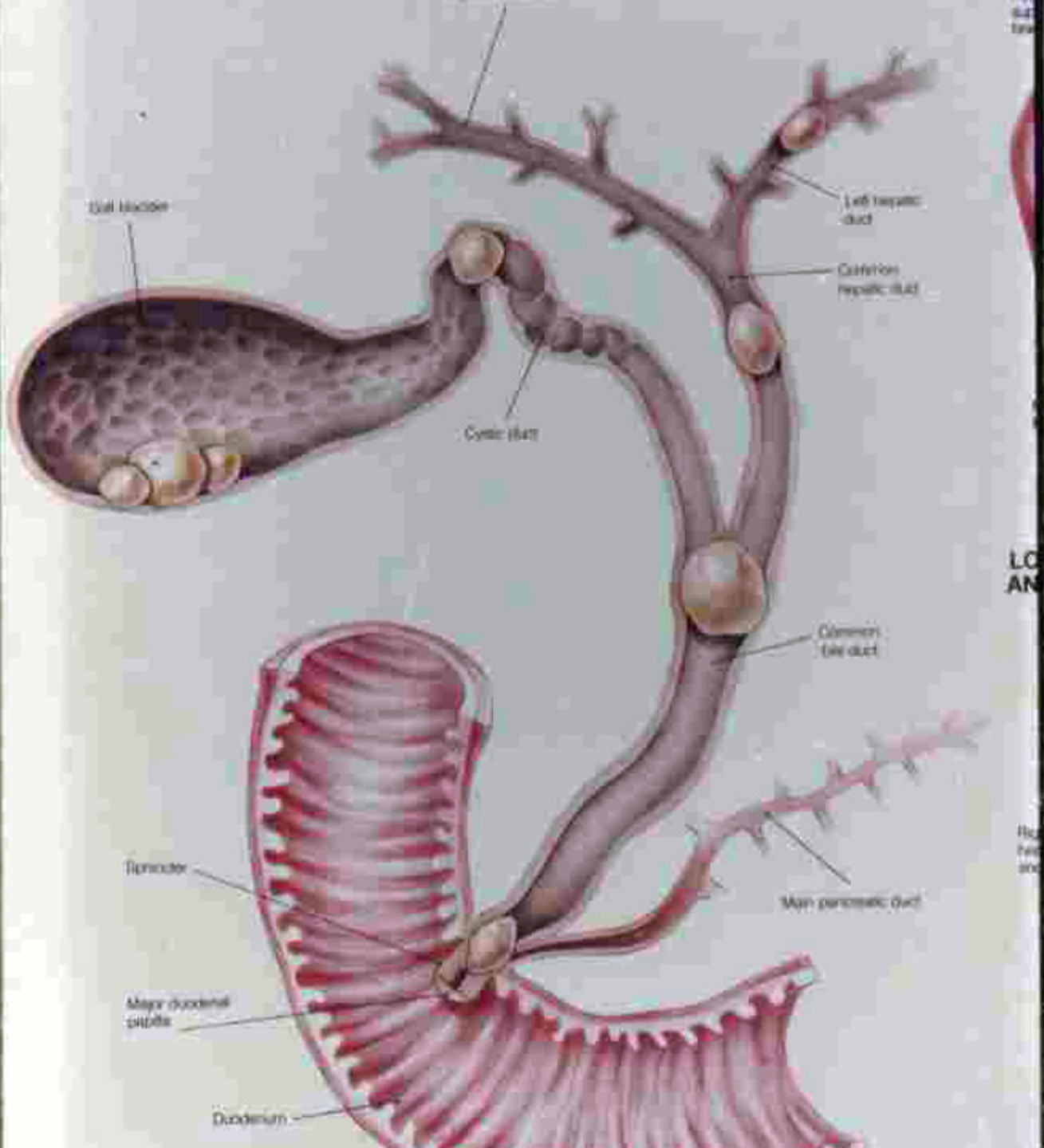
SOD outcomes with sphincterotomy

- Type 1: papillary stenosis. Sphincterotomy improves >90%, restenosis rates variable
- Type II: 75% to 90% improvement
- Type III: 25-75% improvement at best
  - Consider first trial of chemical relaxation with nitrates or calcium channel blockers, SSRI's

Vitamin E 400U MAY reduce restenosis rate. (No compelling data, but low risk)

Biliary Pancreatitis Definition

- Pancreatitis associated with elevated liver enzymes, most predictable: ALT>3x nl, TB >3. Presence of dilated duct not as helpful
- Suspect with stones or sludge seen in gallbladder, or stones in CBD. Ultrasound may underestimate duct size, miss MOST CBD stones, and may not visualize pancreas


Gall bladder
Left hepatic duct
Common hepatic duct
Cystic duct
Common bile duct
Pancreas
Main pancreatic duct
Major duodenal papilla
Duodenum

ERCP and Acute Pancreatitis

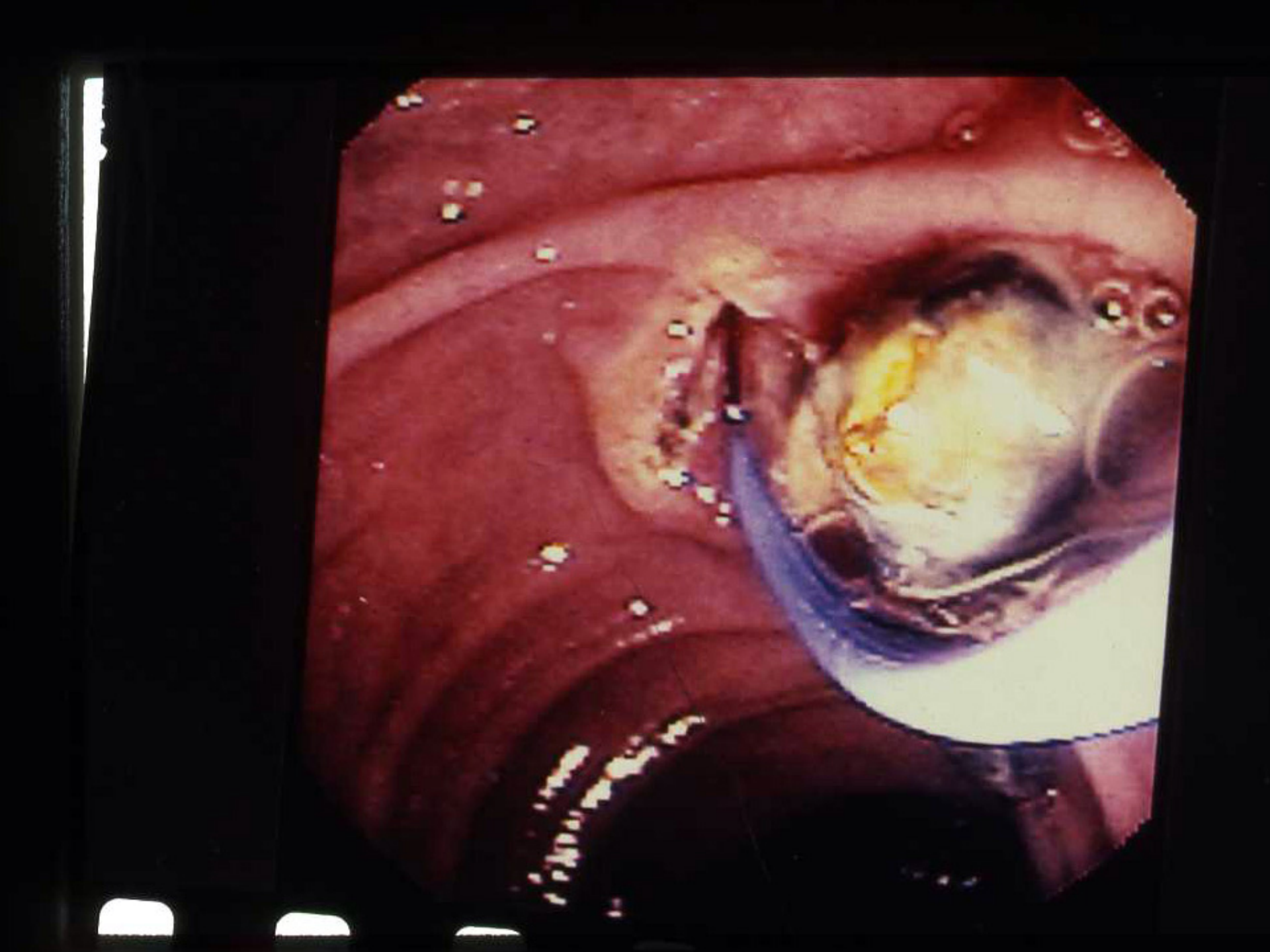
AVOID IN MOST CASES except:

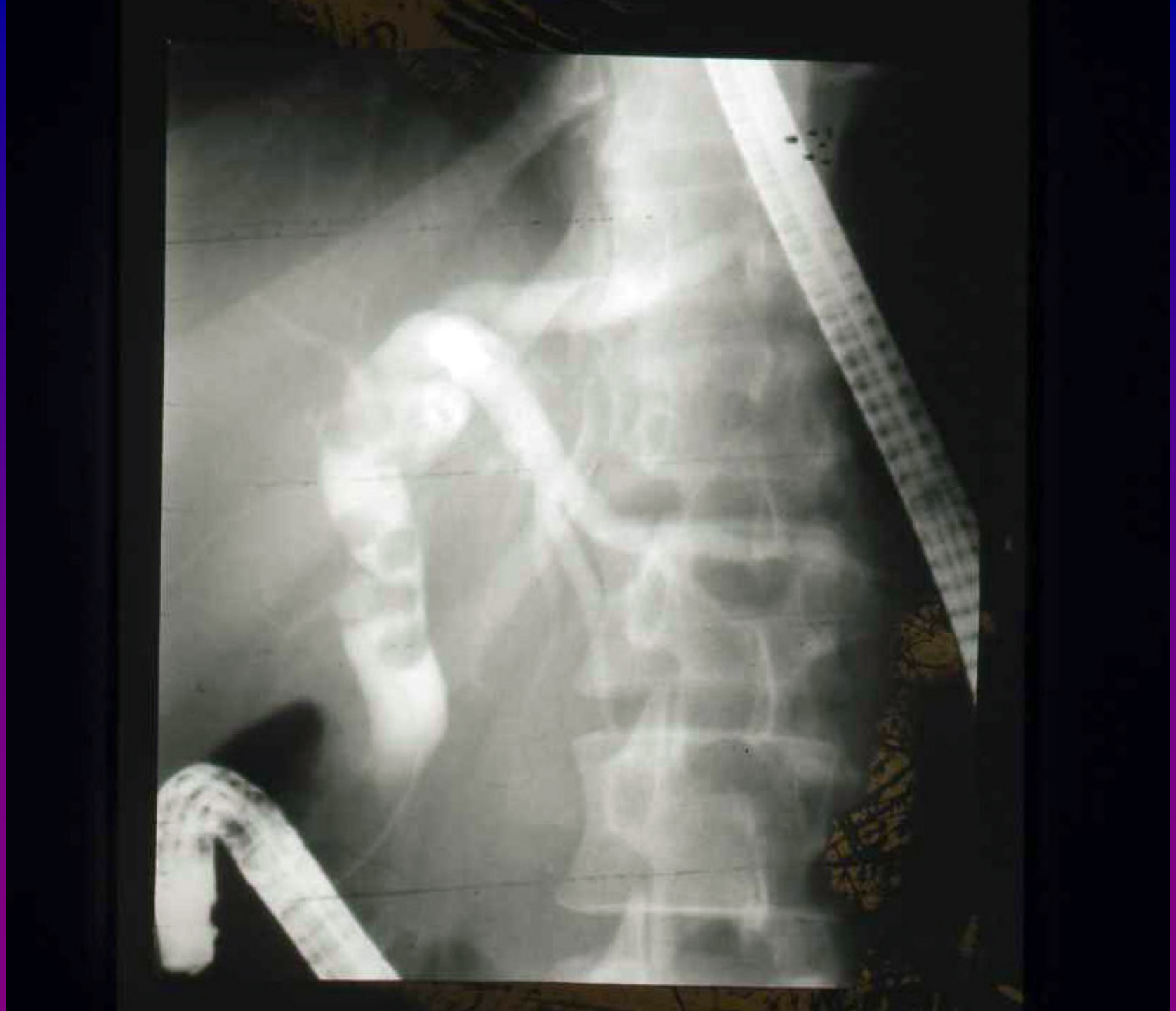
- Severe biliary pancreatitis whereby patient condition is not improving over hours after admission/hydration **AND** you have objective evidence of cholangitis or presence of CBD stones
- Hemosuccus pancreaticus or Wirsungorrhagia (help by placing drain, removing clot, tamponade, tailor surgery or angiography
- Pancreatic duct rupture with pancreatic ascites

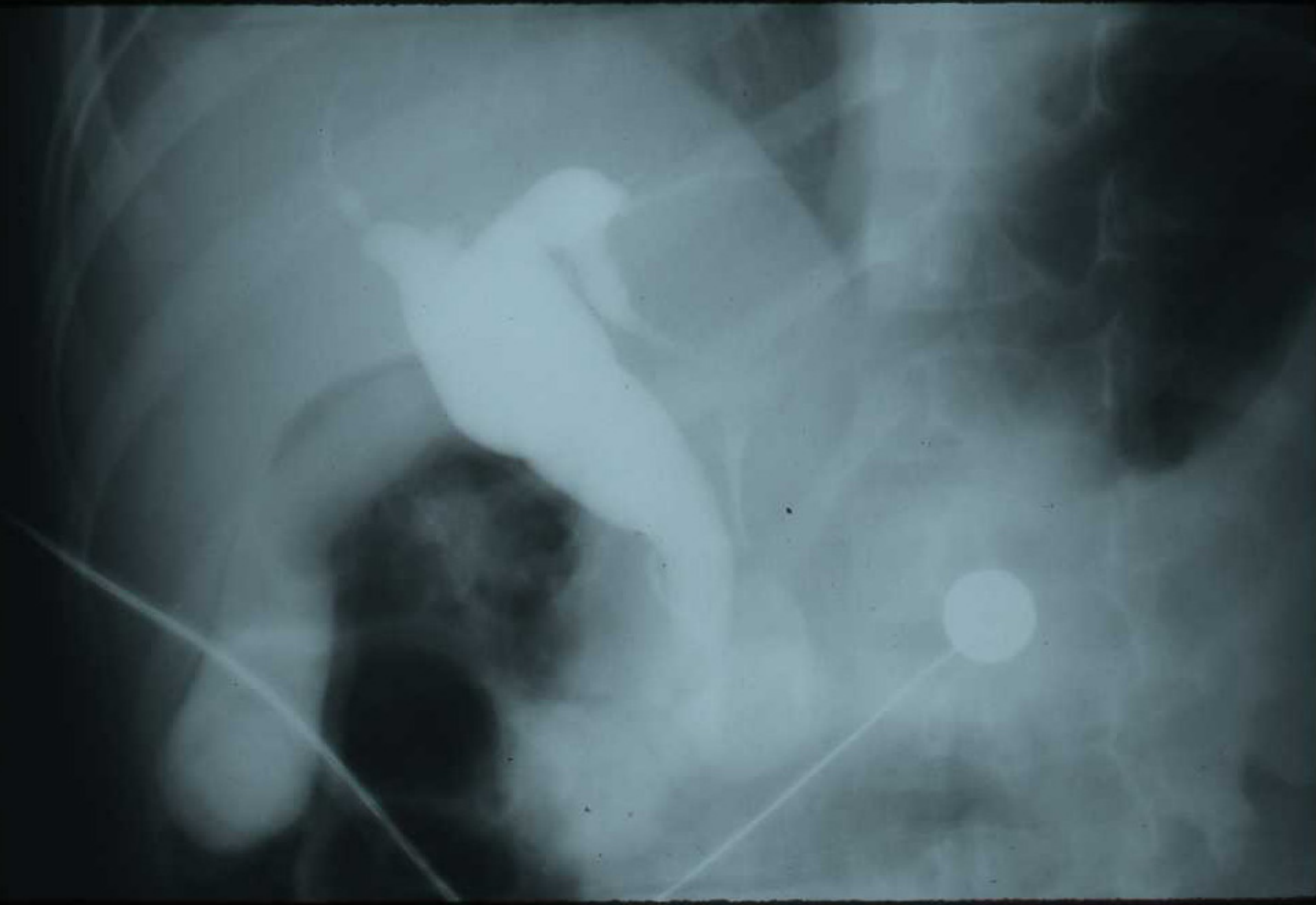
ERCP for Biliary Pancreatitis: First wait until acute inflammation gone

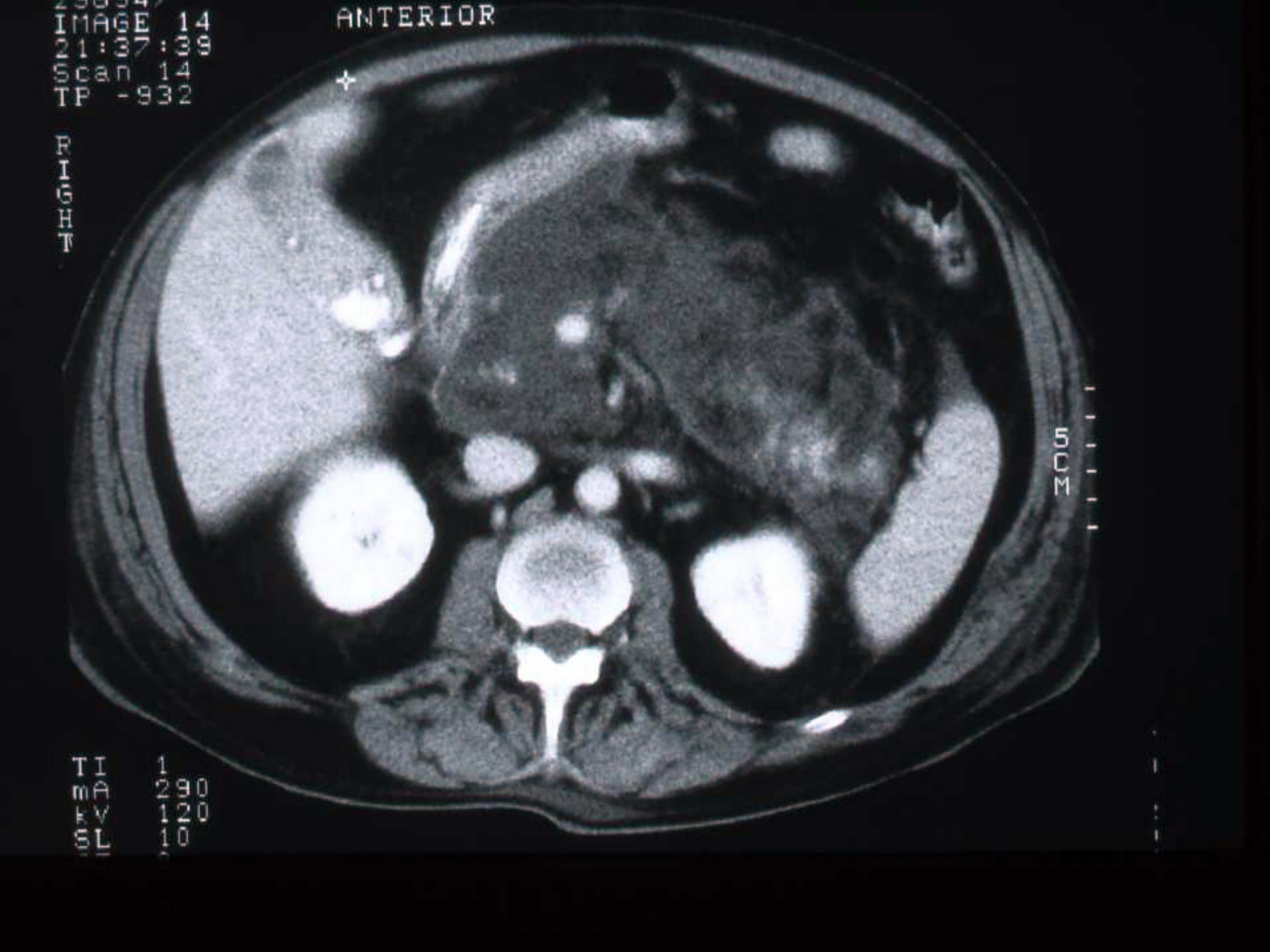
- **Do not do** “prophylactic sphincterotomy” pending definitive cholecystectomy; best practice standard is elective CCY

- **Do** definitive sphincterotomy in patients with comorbidity rendering them non-surgical candidates (cirrhotics, CHF, etc)





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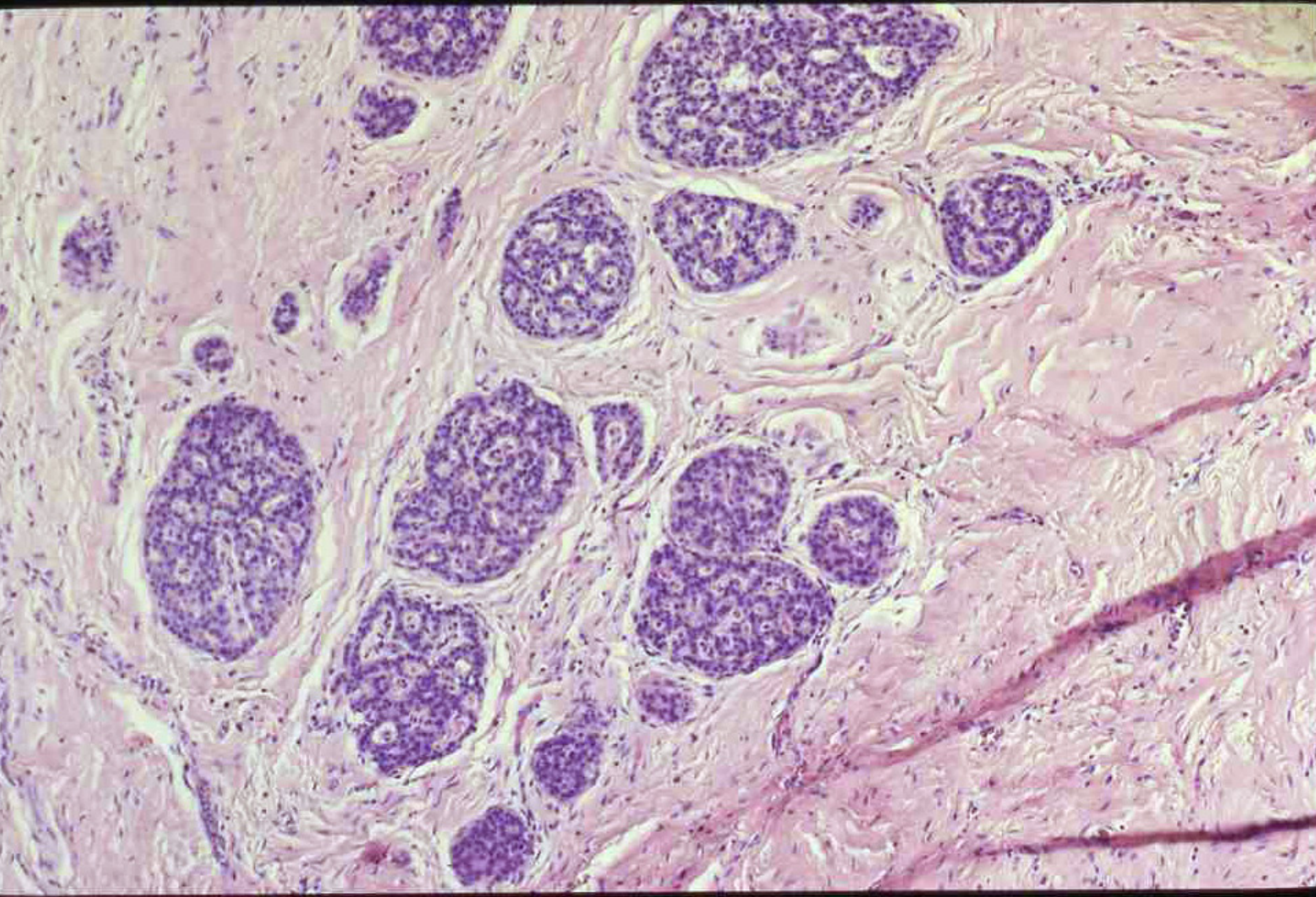
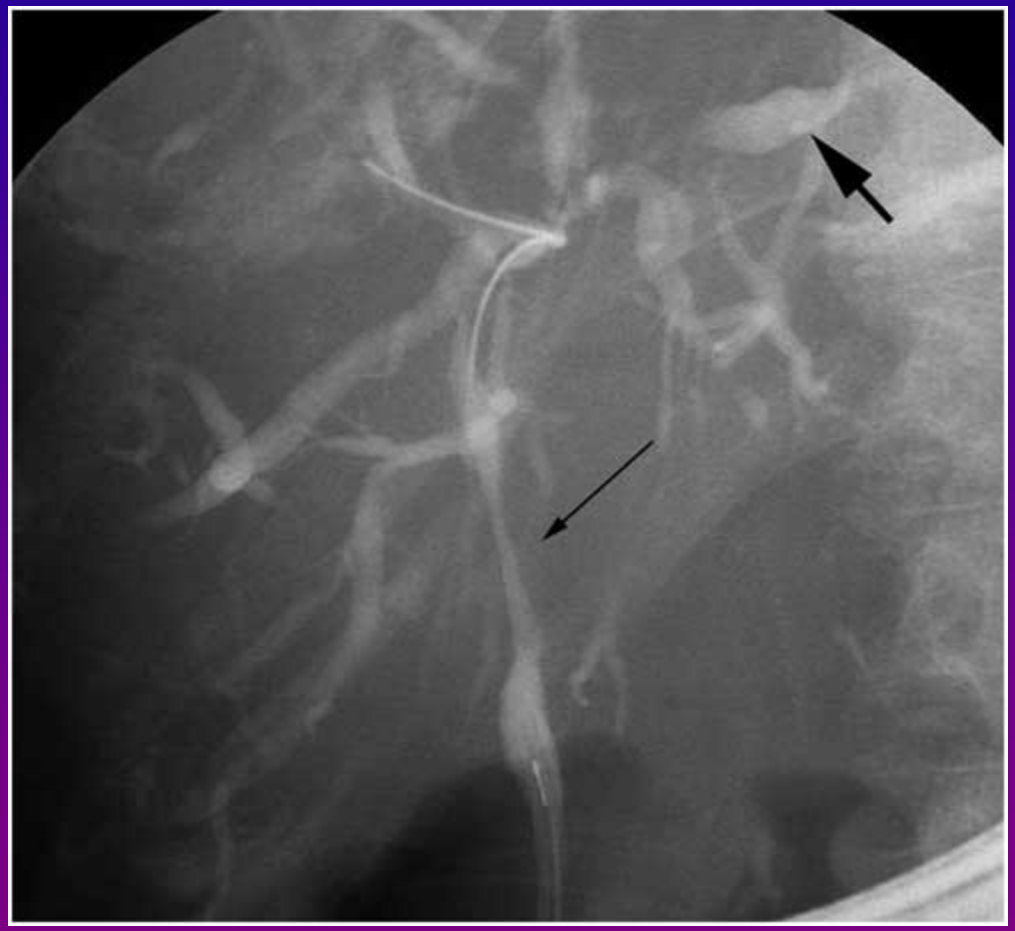
ERCP and Chronic Pancreatitis

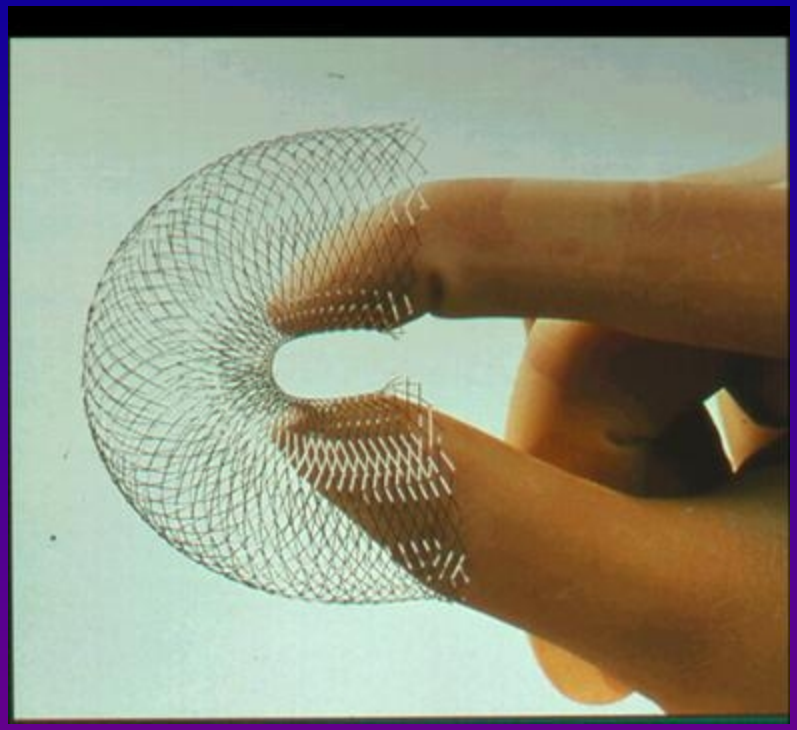
- Lack of randomized controlled trials; case series with widely discrepant outcomes
- Rational to offer: May open stenotic os, dilate dominant strictures, help select candidate for definitive surgical procedure
- Reason to run the other way: If 24-7 pain for years, the chances of pain relief are almost zero. Don’t kid yourself, don’t mislead the patient, inform them well.

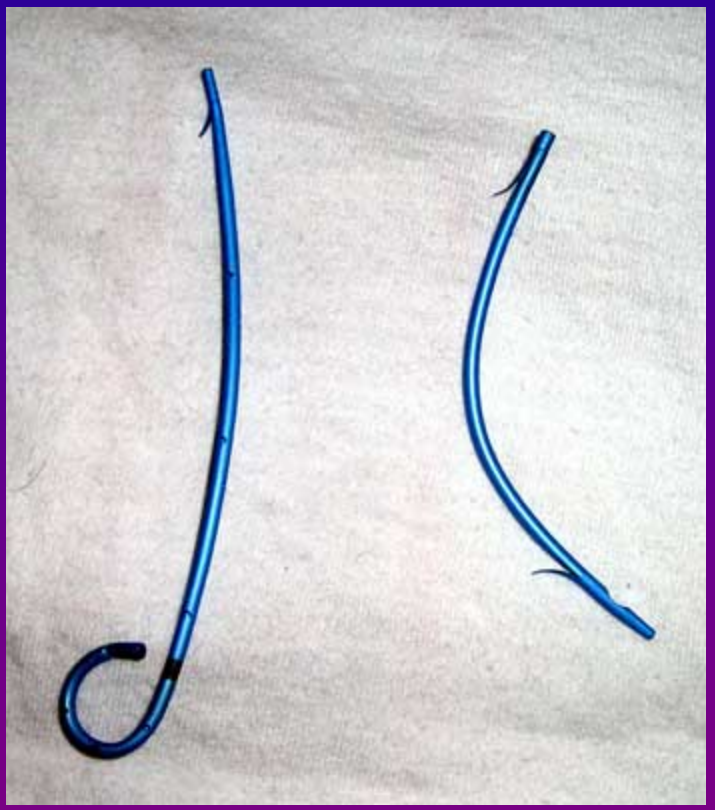


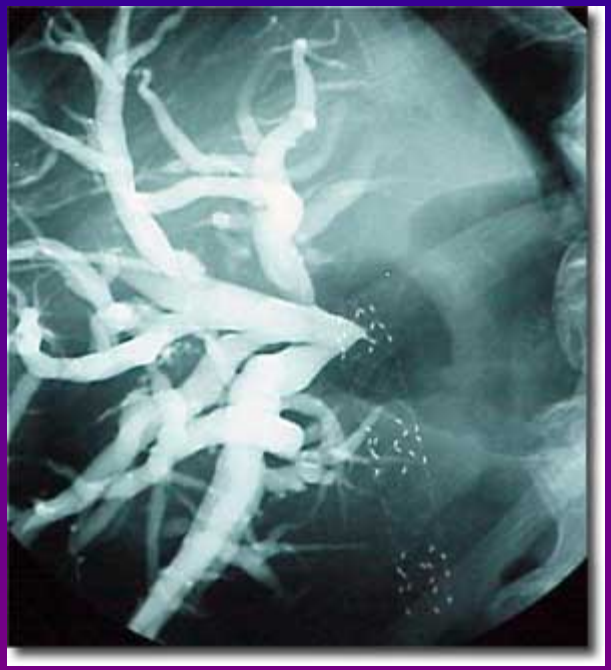
ERCP for Suspected Malignancy

- Intraductal papillary mucinous neoplasia
- Ductular pancreatic adenocarcinoma (think EUS first because you can stage and get tissue dx)
- Cholangiocarcinoma (dx and stent)
- Portal adenopathy (may relieve jaundice)
- Primary duodenal or ampullary CA (endoscopic mucosal resection, ampullectomy, APC)
- No therapeutic benefit for:
  - noncommunicating pancreatic cysts
  - Endocrine tumors (carcinoid, insulinomas, MEN, etc.)
  - Metastases from elsewhere (prostate, thyroid)





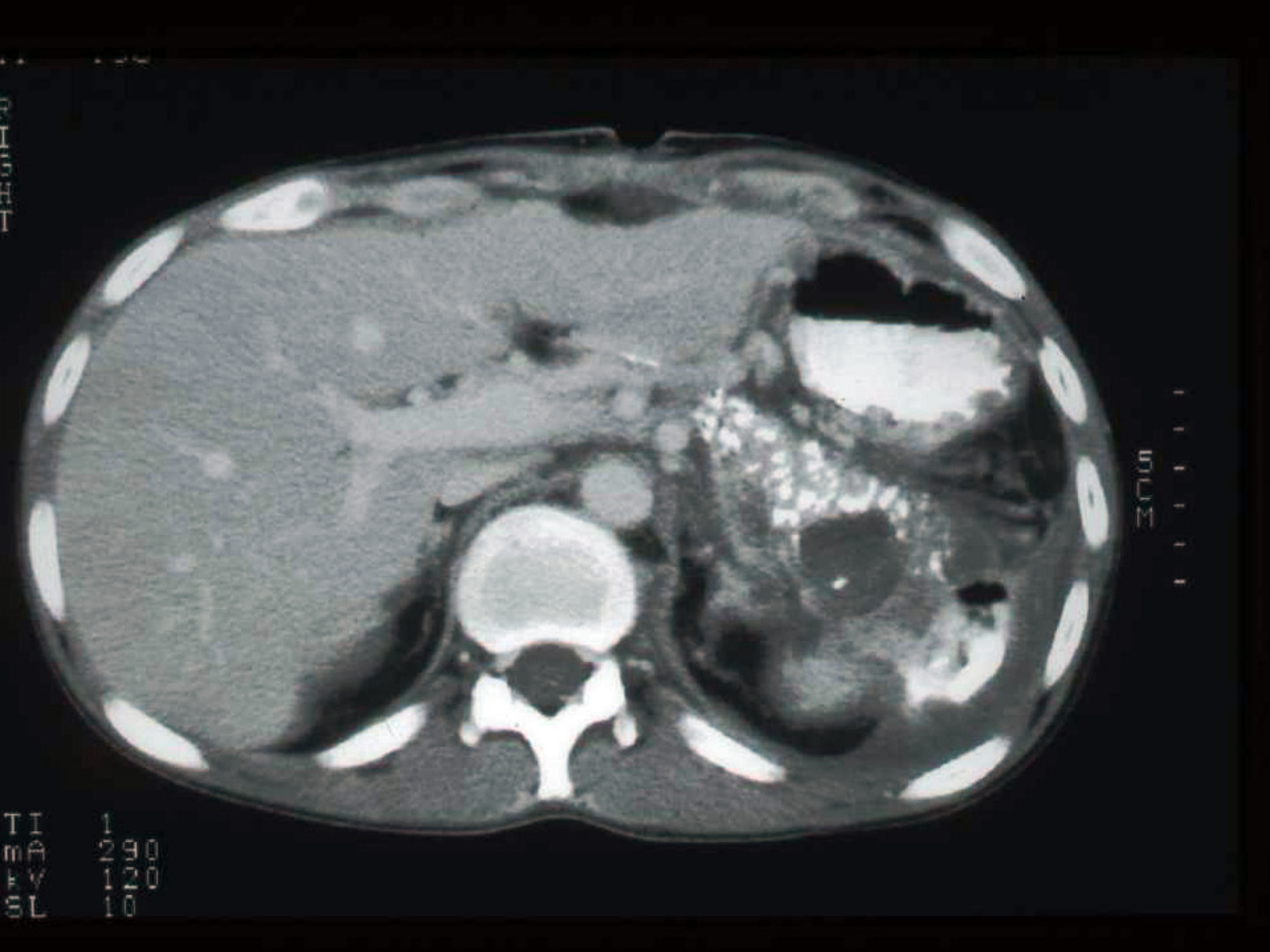




Pseudocyst Drainage: 90% Effective, 10% Complications

- Provides internal drainage for large symptomatic cysts (gastric outlet obstruction, anorexia)
- Cyst wall must be mature, 1cm adjacent to stomach or upper small bowel lumen, sufficient "window" without large blood vessels
- Use antibiotics (fluoroquinolones, 3rd gen ceph)
- Involve surgery in decision before you proceed

**Percutaneous methods are less effective, and have a higher complication rate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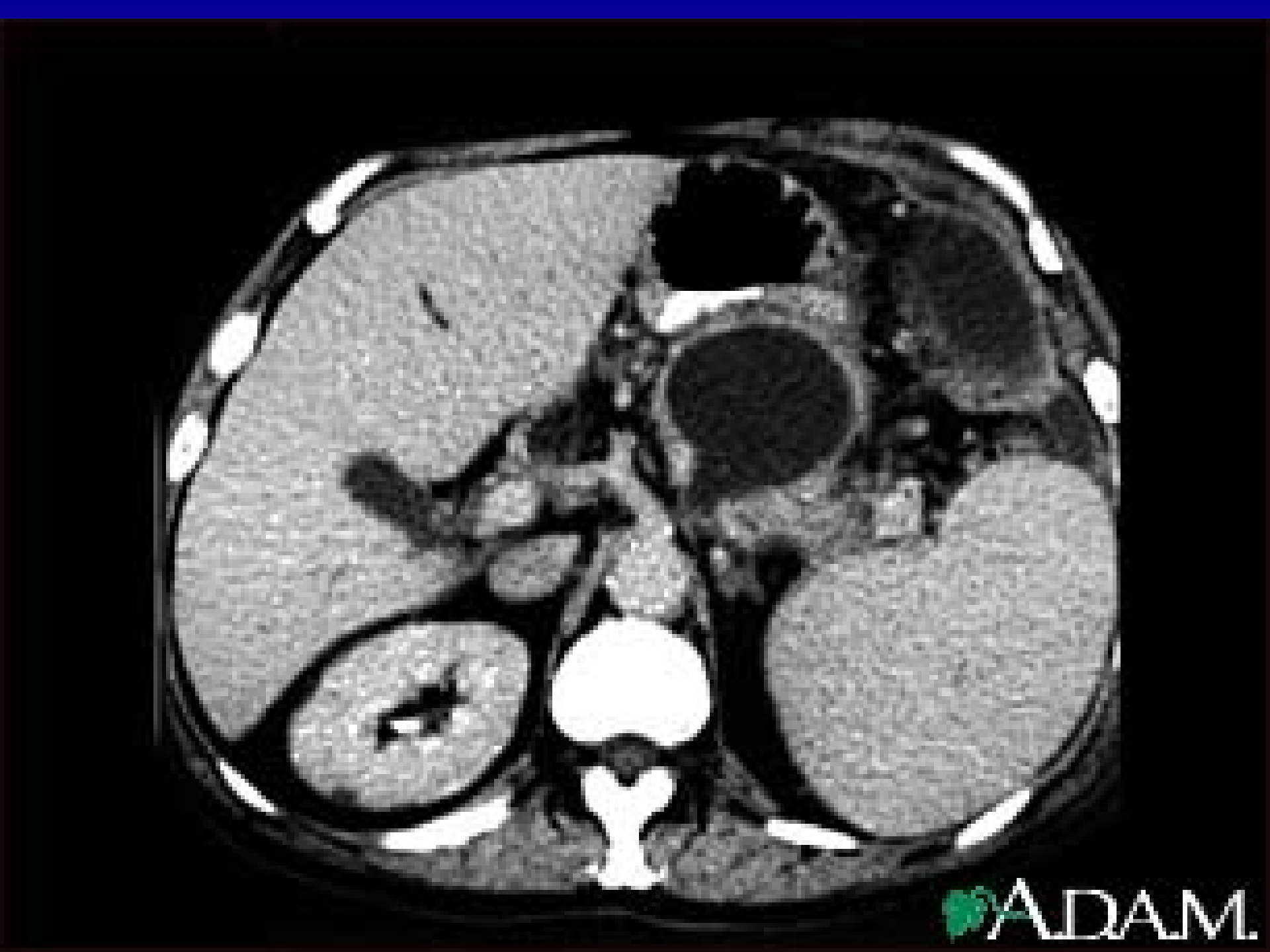
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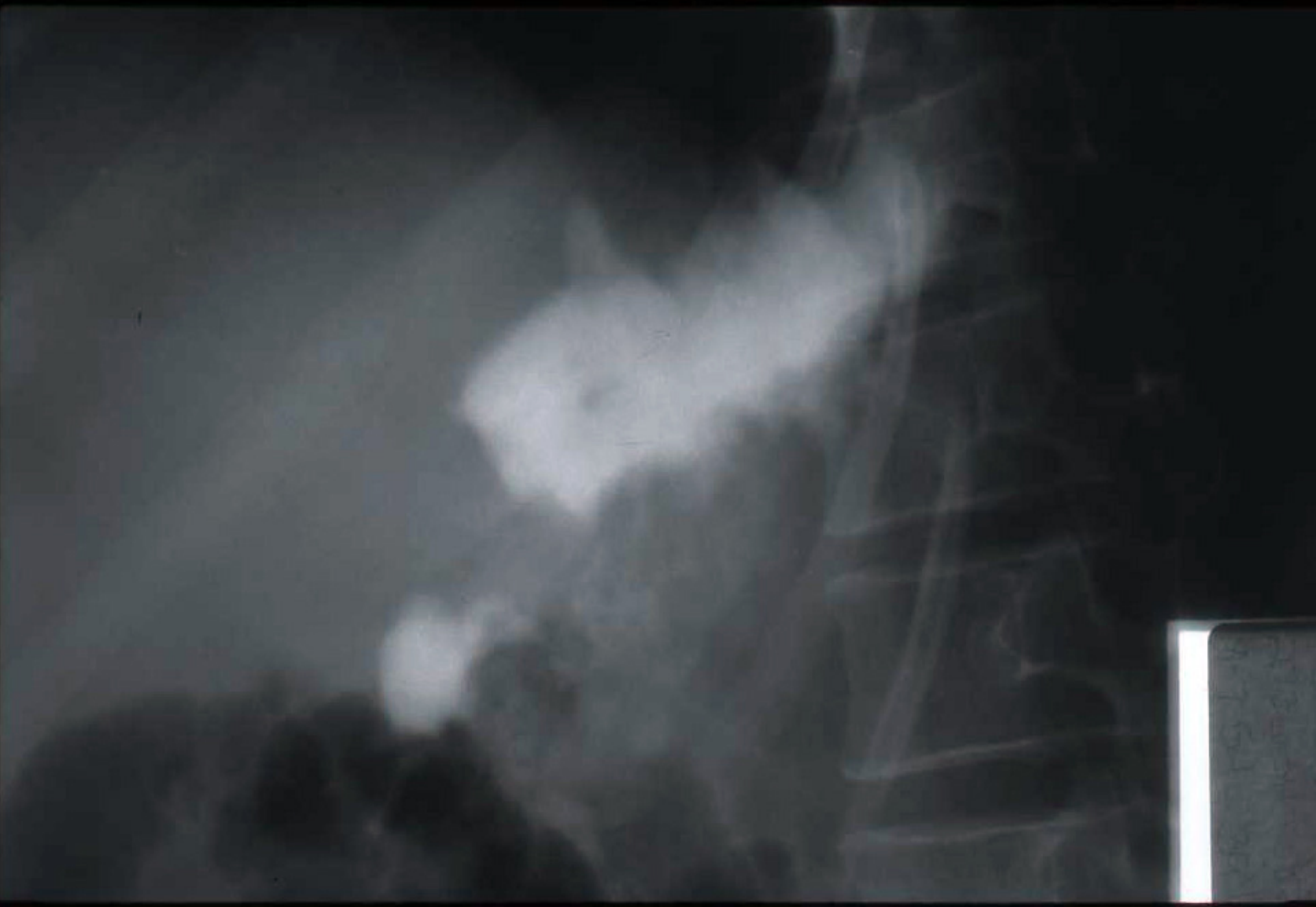

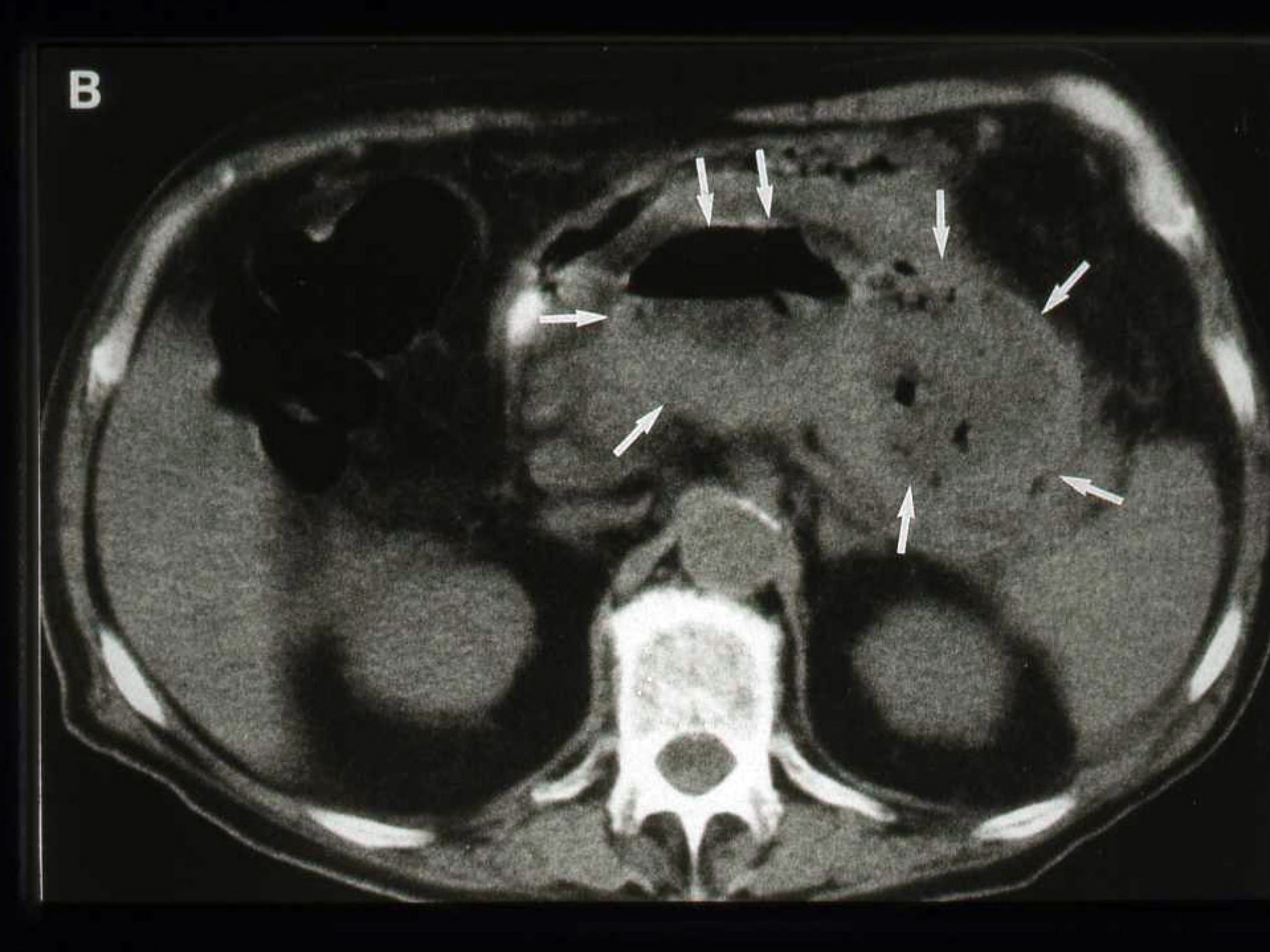
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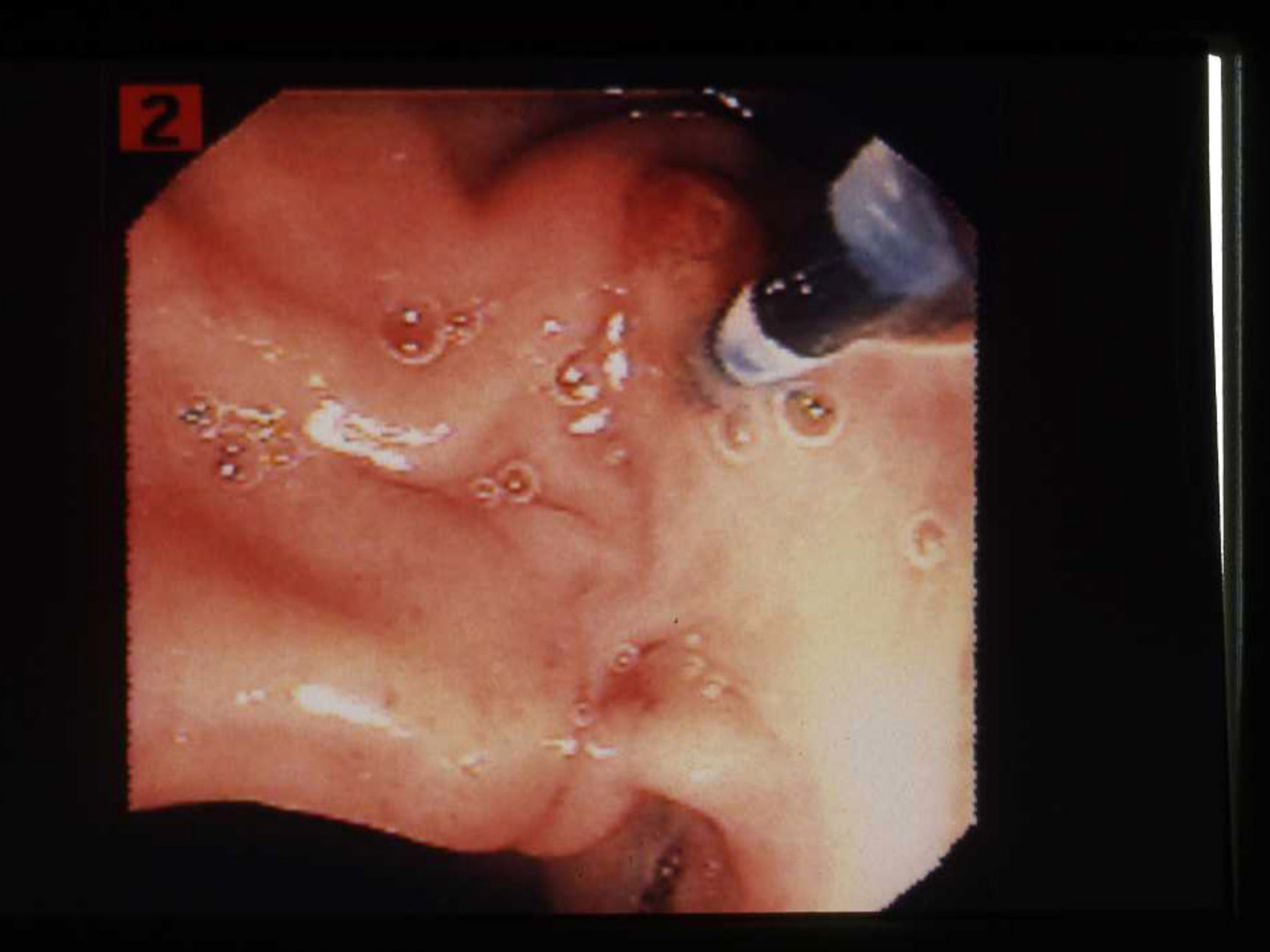
EMERGENCY ERCP:

“Take your Cipro and call me in the morning”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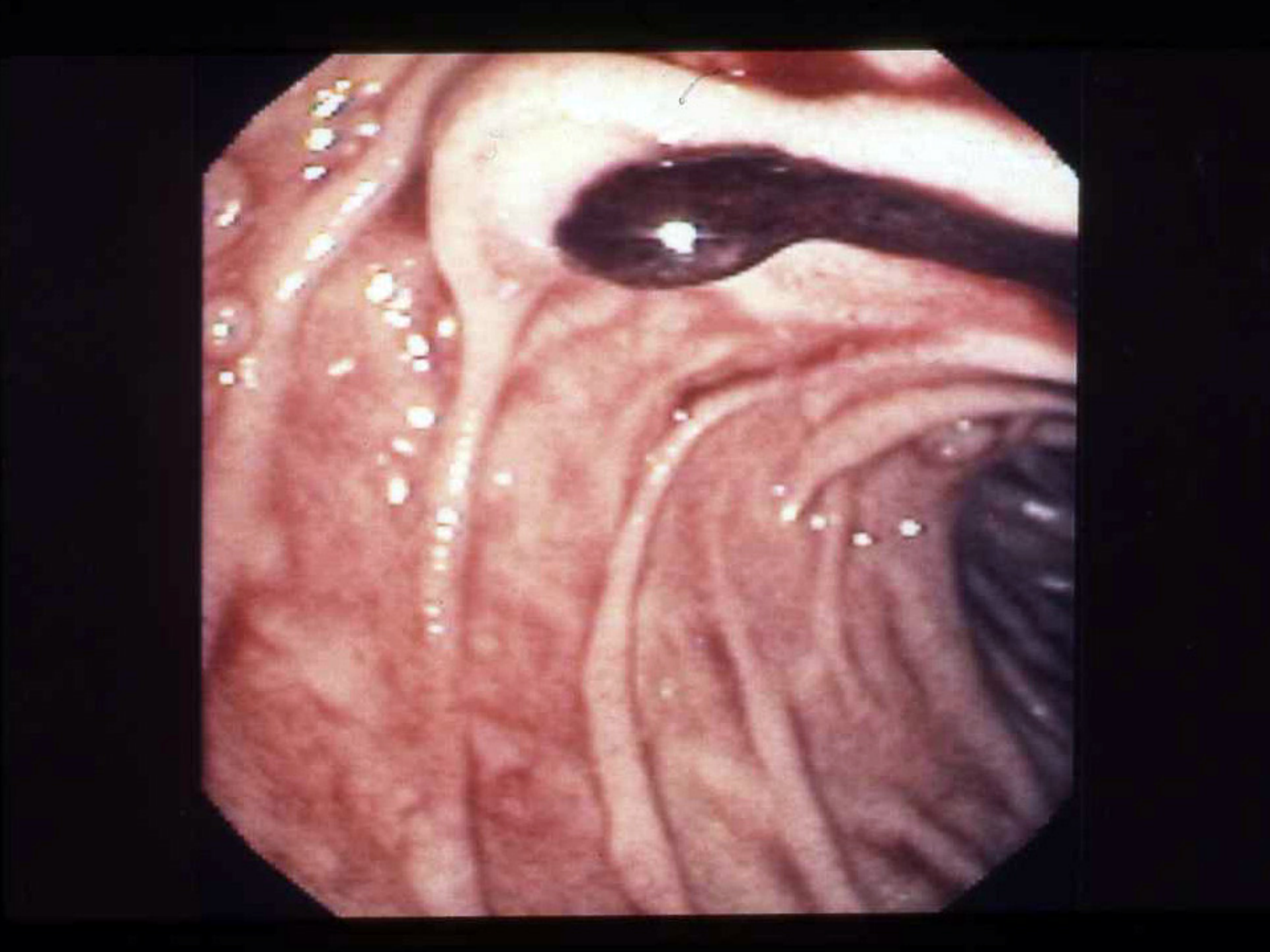

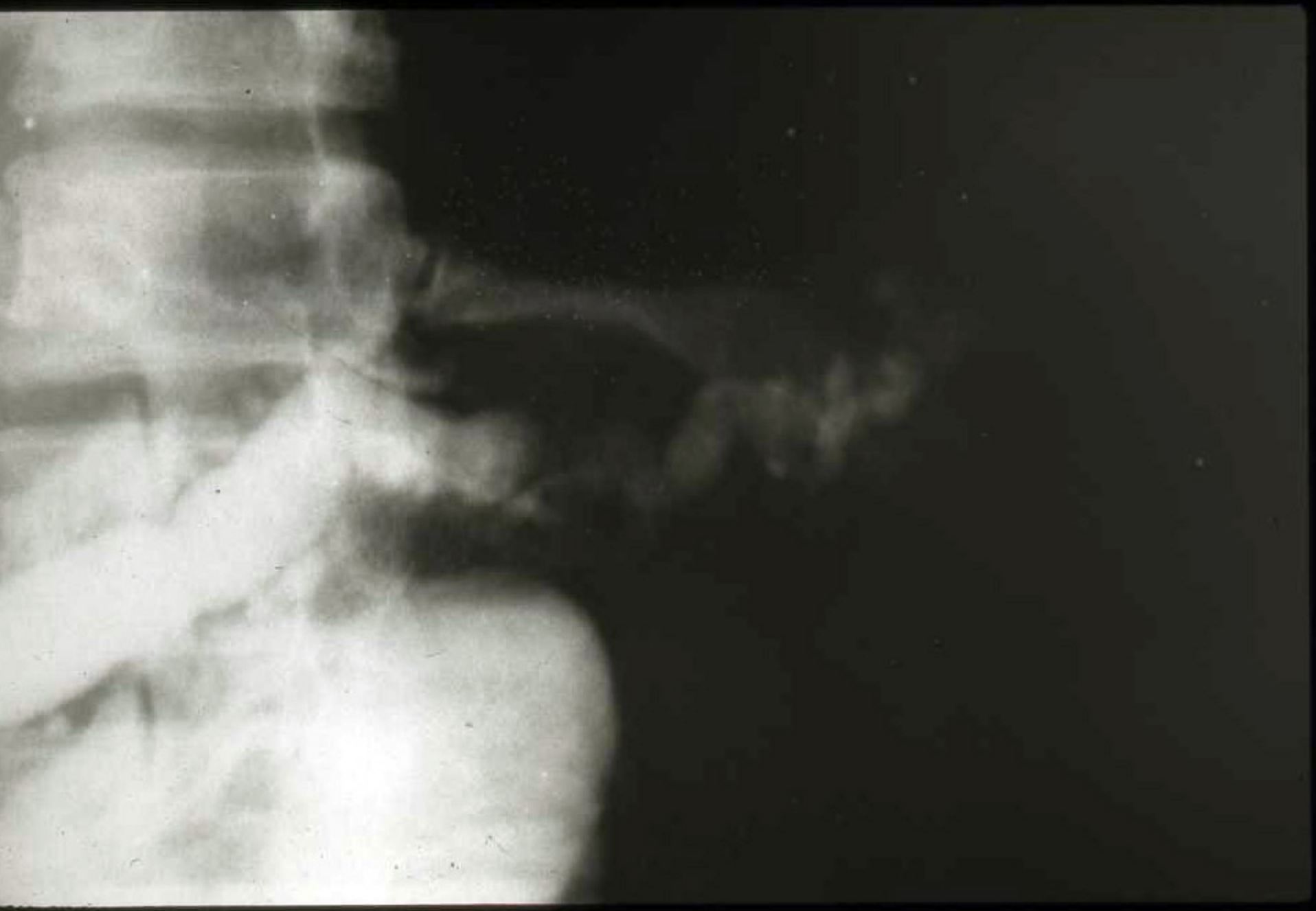

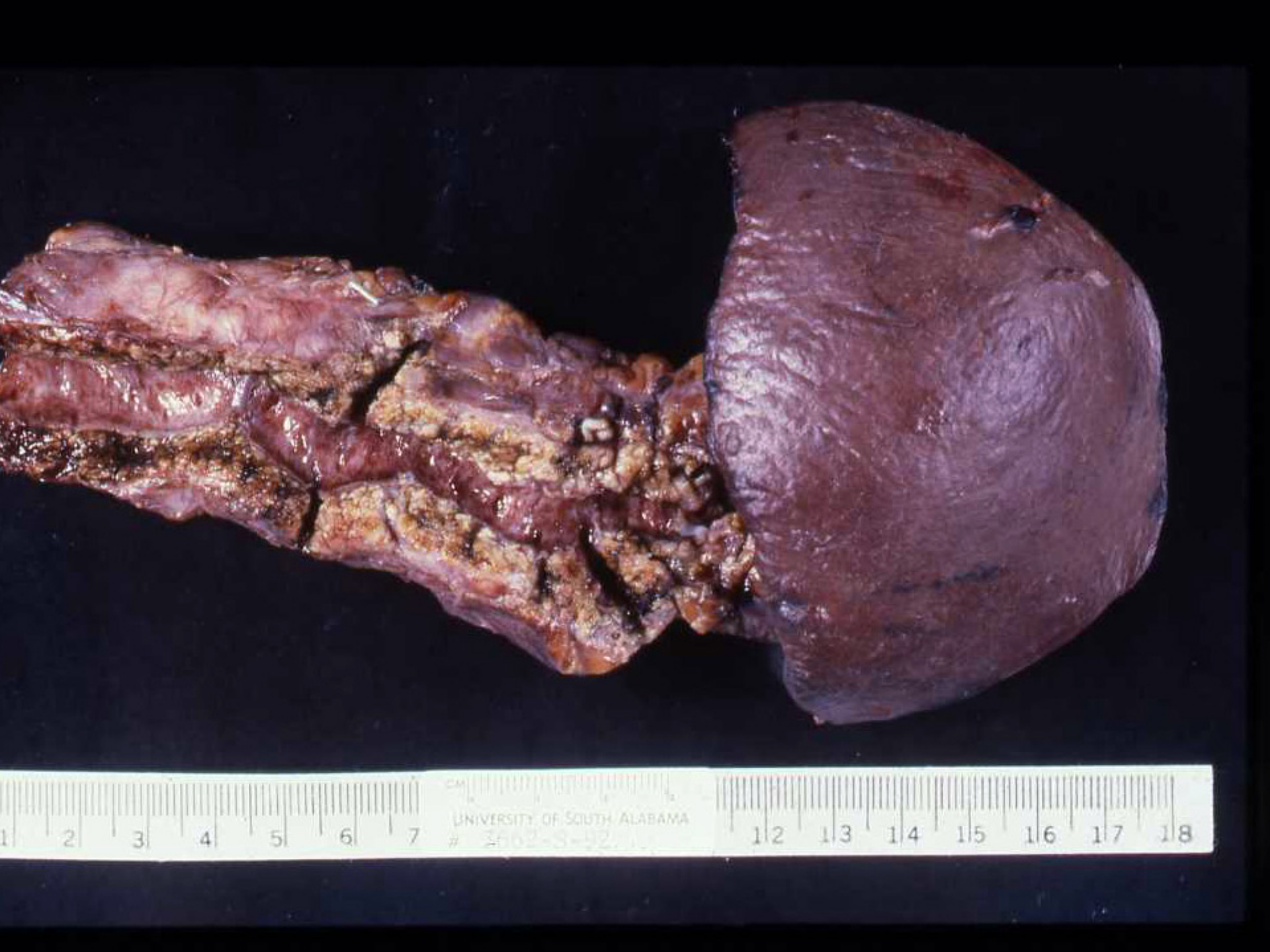
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ERCP Report Documentation

- Clearly Define Indications
- Can bill for EGD/dilation and ERCP at the same time if EGD scope needed to do something you couldn't do with ERCP scope
- Say what you did, how you did it, and why you did it. Include names and sizes of devices
- If you purposefully avoid PD cannulation, you must say why (duct purposefully not sought)

Talk to the Family Afterwards

- The patient will be too sleepy to comprehend
- Establish relationship with the family, tell them what to feed the patient at home
- Provide easy access to you or your on-call team and reiterate instructions to the family. Proactively embrace possible complications.
- When in doubt, observe patient overnight

Post ERCP Concerns/ Instructions:

- Pancreatitis usually occurs within 4 hours of waking up, or after first meal
- Low fat clears OK after 4 hours, advance if tolerated to low fat, lowish protein regular by the next day, then whatever usual fare
- Call for severe abdominal pain, nausea, or vomiting
- “Gas” doesn’t last more than several hours
- Give follow up appt for stent removal or change

Clinical Case One:

- 32 yr old para 4, at 20 weeks gestation with twins, admitted with acute pancreatitis, gallstones in her gallbladder, CBD 1cm, AST and ALT at 350 and 425, TB 5, febrile to 102 with systolic blood pressure lowish at 98, sinus tachycardia 115.

- What do you do? CT? MRCP? ERCP? Just watch and wait? Feed her? Surgery?

ERCP and Pregnancy

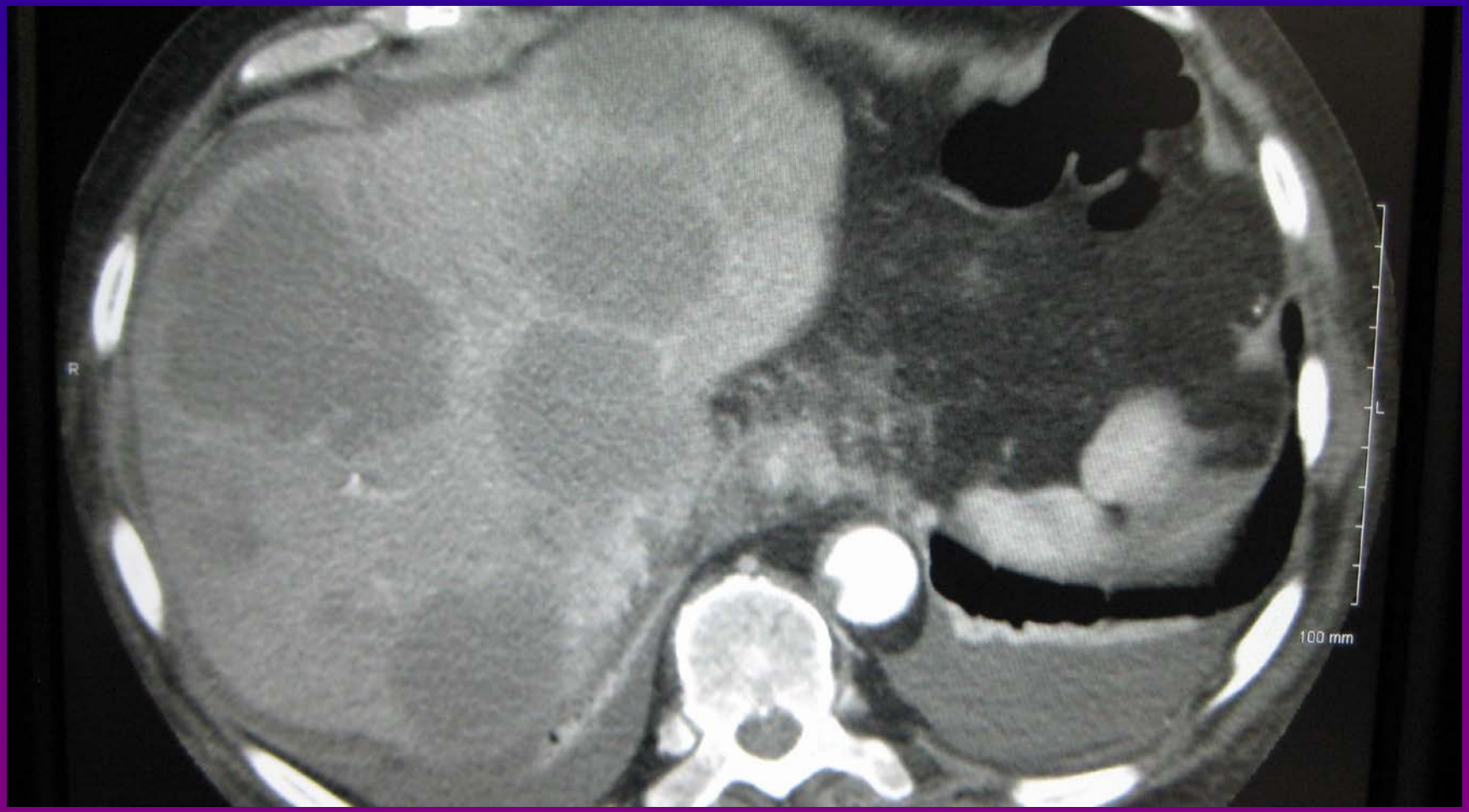
- Safe in all trimesters if needed
- Can shield uterus fairly easily till third trimester, much less radiation than CT
- Not needed for dx generally, usually most helpful for severe biliary pancreatitis, may perform definitive sphincterotomy in select cases to avoid second attack BP before parturition…….option for ursodeoxcholic acid for sludge

Clinical Case Two

- 66 yr old with prior diagnosis colon cancer and liver metastasis, receiving chemotherapy now with TB elevated to 18. You are asked to put in a biliary drain so further chemo can be given.

- What to do? CT? MRCP? ERCP?

Will a plastic CBD stent help this?

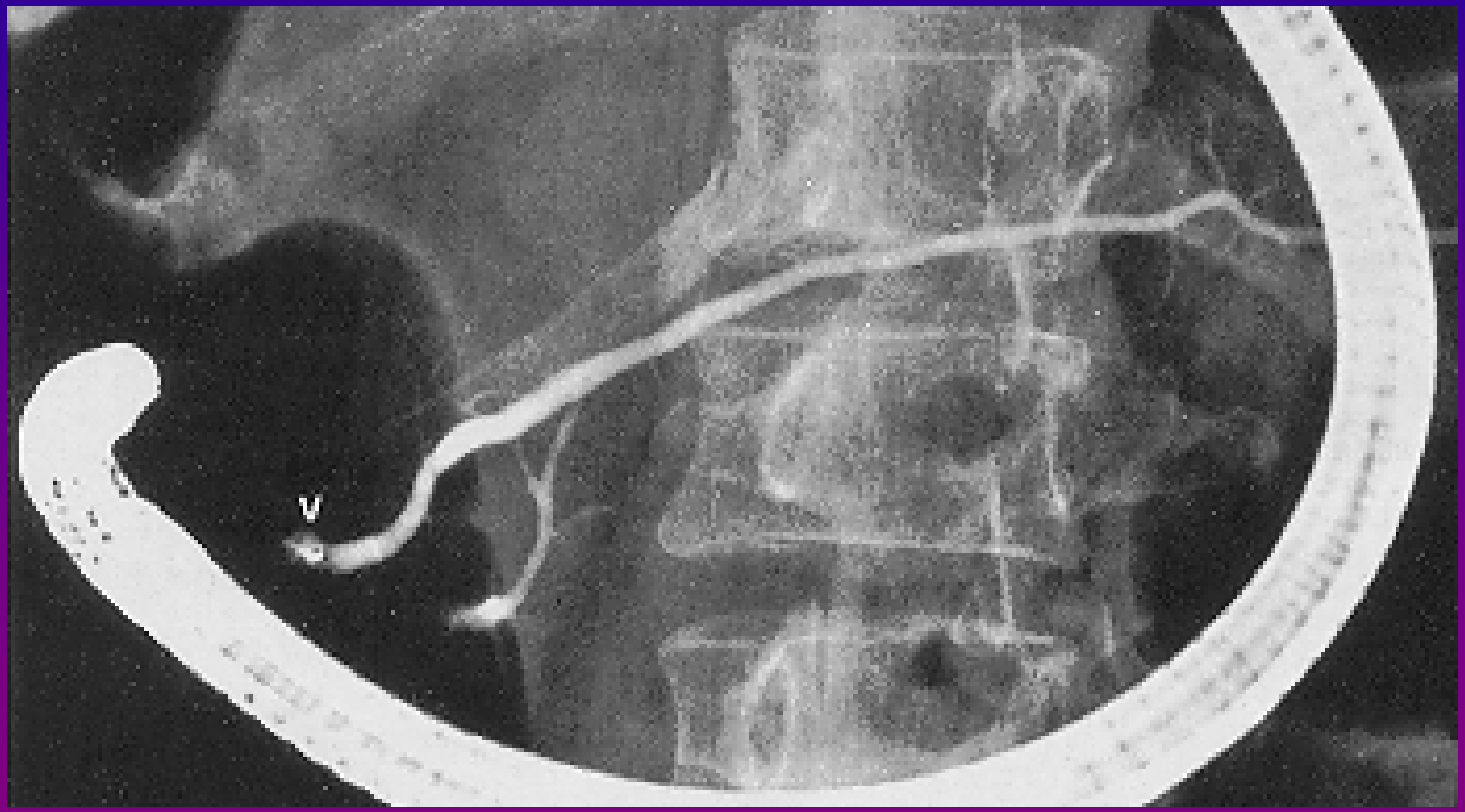


Clinical Case Three:

- 14 yr old with second attack of acute pancreatitis and PD mildly dilated to 4mm along the dorsal duct.

- What to do? Take a family history? CT? US? MRCP? EUS? ERCP?

Pancreas Divisum



Clinical Case Four:

- 55 yr old seen in ED with icteric sclera, drinks about 2 beers daily, 2ppd smoker for 30 years, afebrile with normal vitals, non-tender abdomen, Labs: TB 5, alk phos 450, mild elevated AST and ALT, normal amylase, lipase and creatinine
- Is this an emergency? What is the next best step?

Double Duct Sign – pancreatic cancer