"PANCREATITIS" & GASTRIC SURGERY

POST GASTRECTOMY SYNDROME

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CASE: M/82
BACKGROUND

- Walks with stick, ex-smoker, NKDA
- Background of hypertension, dyslipidemia, old CVA
- Perforated duodenal ulcer
  - Polya gastrectomy (2001)
- History of cholangitis (2008)
  - MRCP (2008): gallstone, dilated CBD, no definite ductal stone
  - Refused cholecystectomy

CASE: M/82 PRESENTATION

- Presented with upper abdominal pain and (clear then bilious) vomiting for 1 day
- Absence of jaundice or tea-colored urine
- Physical examination:
  - Mild dehydration; Clear chest; Soft abdomen, mild epigastric tenderness, upper midline scar, brown stool on per-rectum

CASE: M/82 INVESTIGATIONS (1)

- Preliminary blood tests
  - WBC 10.5 x10*9/L; Hb 11.2 g/dL; Plt 226
  - LFT Bili 17 ALP 56 ALT 18 Alb 28
  - RFT Na 138 K 3.3 Urea 6.3 Creatinine 84
  - Blood gas normal
  - Serum amylase 505
  - Urinary amylase >5000

CASE: M/82
INVESTIGATIONS (2)

- USG abdomen: dilated biliary system, common duct obscured, no obvious ductal stone, gallstone?; segment of dilated small bowel over upper abdomen
- Desaturation in ward, required intubation and mechanical ventilation
- Proceeded to emergency CT abdomen and pelvis with contrast to rule out afferent loop syndrome

CASE: M/82 INVESTIGATIONS (3)

- CT abdomen and pelvis with contrast:
  - Consolidative changes at bilateral lower lobes of lung
  - Evidence of Polya gastrectomy
  - Dilated biliary tree, CBD measures 2.0cm
  - Distended gallbladder with stones
  - No ductal stone
  - Dilated afferent limb
  - Unremarkable pancreas

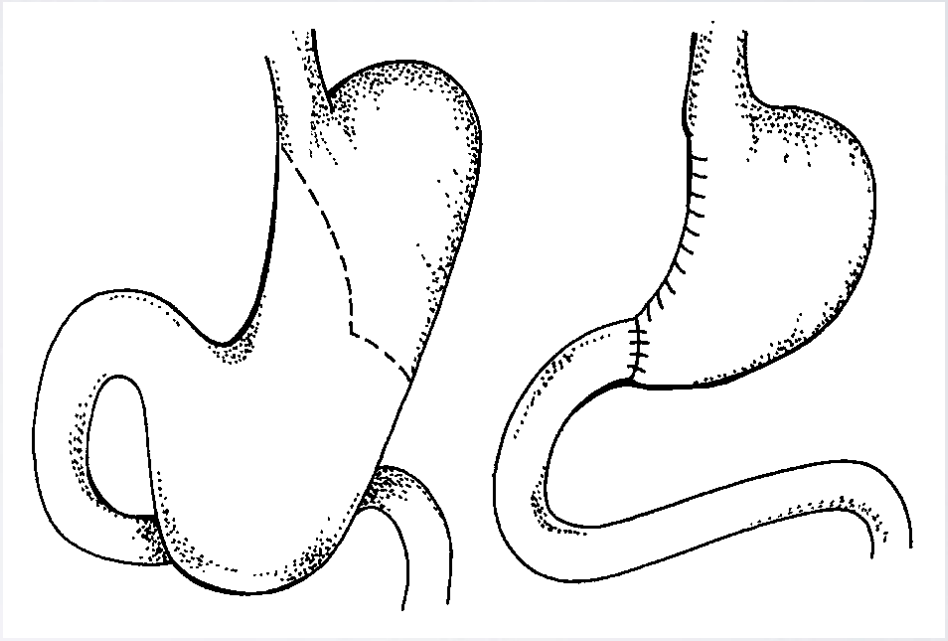
AFFERENT LOOP SYNDROME

GASTRECTOMIES

- Total and partial gastrectomies
- Partial:
  - Billroth I
  - Billroth II
  - Polya (Billroth II with Polya's modification)
  - Roux-en-Y

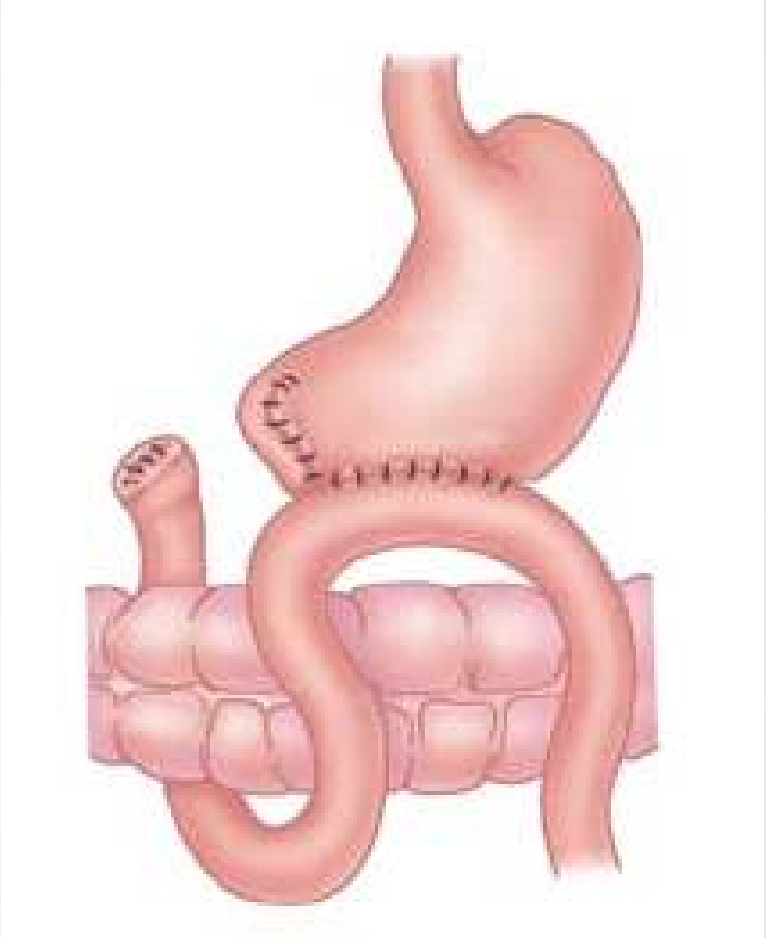
BILLROTH I GASTRECTOMY

- Gastroduodenostomy



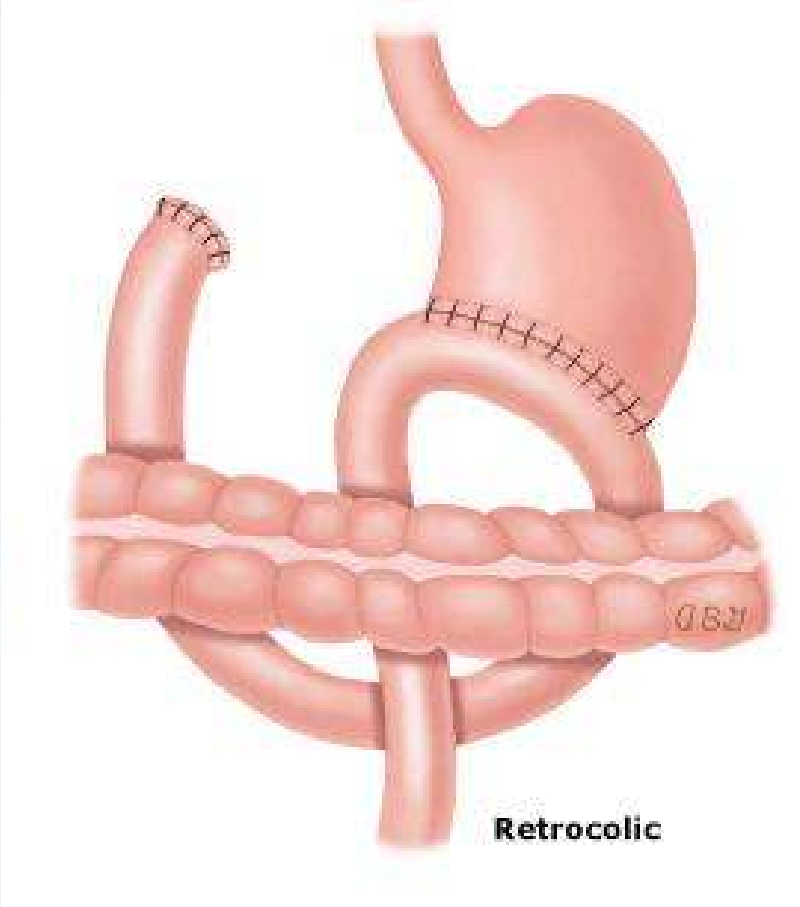
BILLROTH II GASTRECTOMY

- Antecolic or retrocolic
- Anastomosis made anterior or posterior to closed end of stomach
- Side-to-side gastro-jejunal anastomosis

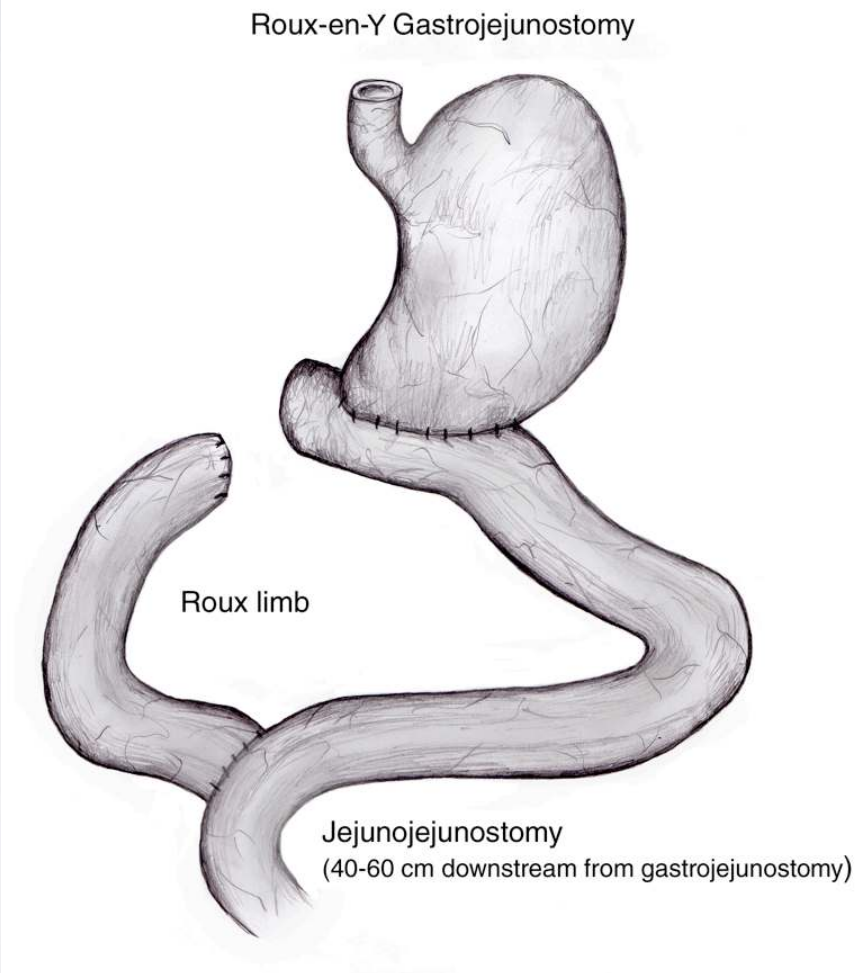


POLYA GASTRECTOMY

- Polya modification of Billroth II gastrectomy
- Retrocolic or antecolic manner
- Open gastric end to jejunal side anastomosis



ROUX-EN-Y


Roux-en-Y Gastrojejunostomy
Roux limb
Jejunojejunostomy
(40-60 cm downstream from gastrojejunostomy)

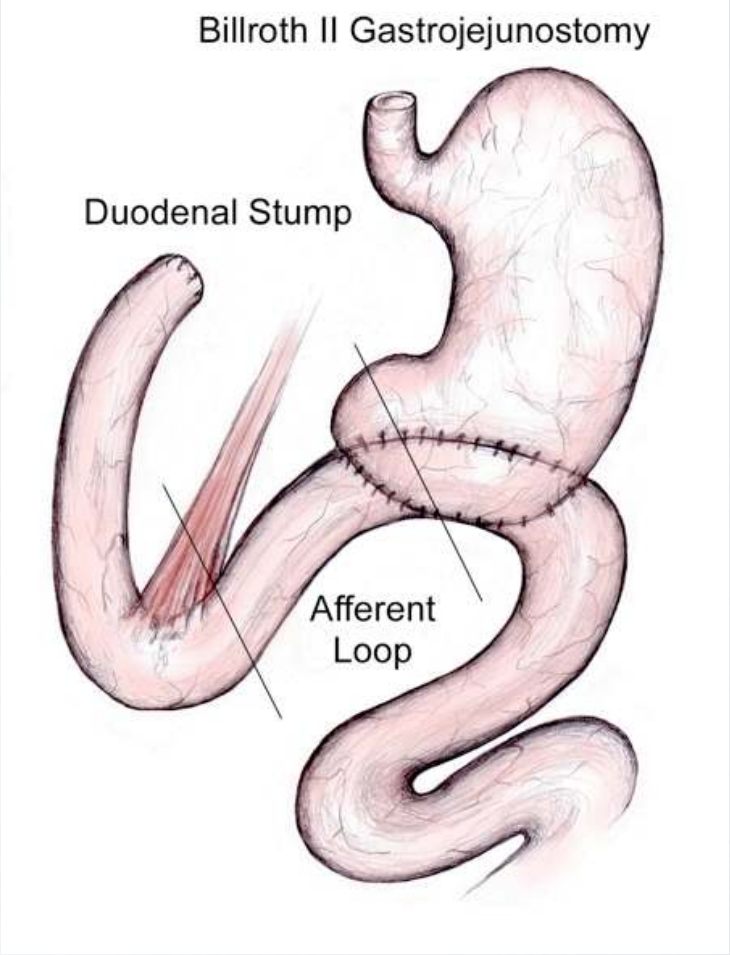
POST GASTRECTOMY SYNDROMES

Constellation of complications after gastric resection

- Early dumping syndrome
- Late dumping syndrome
- Post-vagotomy diarrhea
- Chronic gastric atony
- Roux stasis syndrome
- Small gastric remnant syndrome
- Alkaline reflux gastritis
- Afferent loop syndrome
- Efferent loop syndrome

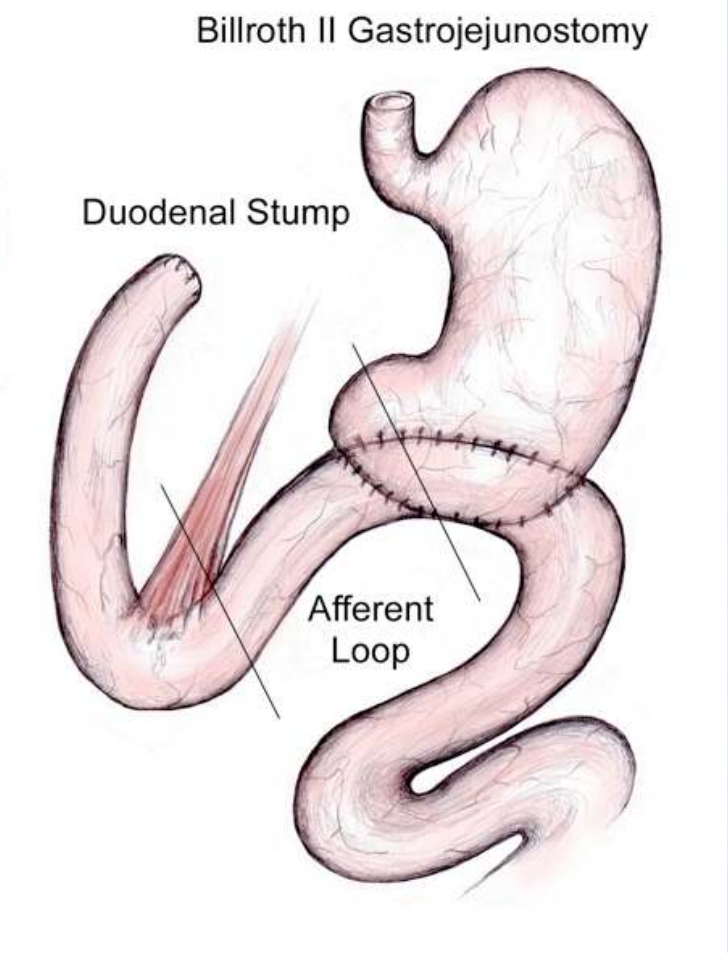
AFFERENT LOOP SYNDROME

- Afferent limb: duodenal stump, remainder of duodenum and segment of jejunum proximal to the gastrojejunal anastomosis
- Infrequent mechanical complication occurs following gastrojejunostomy
- Frequency:
  - 0.3-1.0% (may be underestimated)



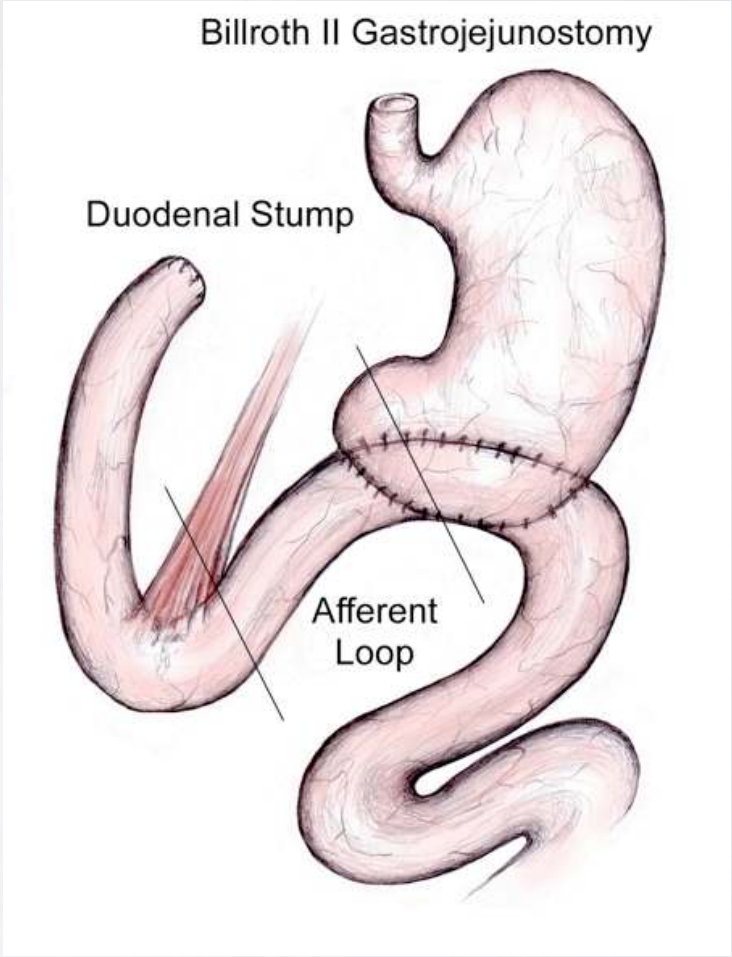
AFFERENT LOOP SYNDROME

- Timing:
  - Acute or chronic; anytime after surgery
  - Acute usually at post-operative 1-2 weeks; has been described to occur at post-operative 30-40 years
- Mortality:
  - Up to 57% in acute cases
  - Frequently associated with complicated cases with bowel ischemia, perforation or peritonitis in delayed diagnosis
- Sex or age:
  - No predisposition



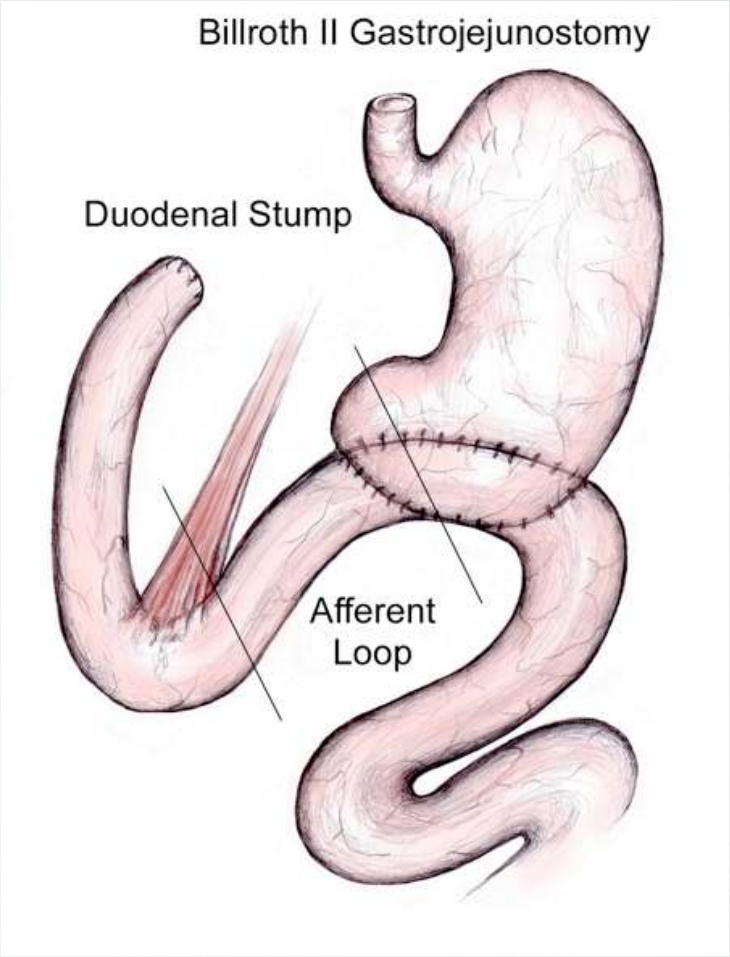
AFFERENT LOOP SYNDROME

- Etiology:
  - Adhesion/Kinking
  - Volvulus
  - Internal herniation
  - Inflammation
  - Stomal stricture
  - Tumor
  - Foreign body



AFFERENT LOOP SYNDROME

- Predisposition regarding surgical technique:
  - controversial data
  - *long* afferent limb (jejunal portion longer than 30-40cm)
  - position of gastrojejunostomy: *antecolic* > retrocolic
  - *mesenteric defect* after construction of retrocolic gastrojejunostomy



AFFERENT LOOP SYNDROME

- Signs and Symptoms
  - Abdominal pain, may mimic pancreatitis
  - Chronic: often relieved by bilious vomiting
  - Ill-defined mass at right upper quadrant (1/3 of acute cases)
  - Tenderness at epigastrium or right upper quadrant
  - Peritonism +/-

AFFERENT LOOP SYNDROME

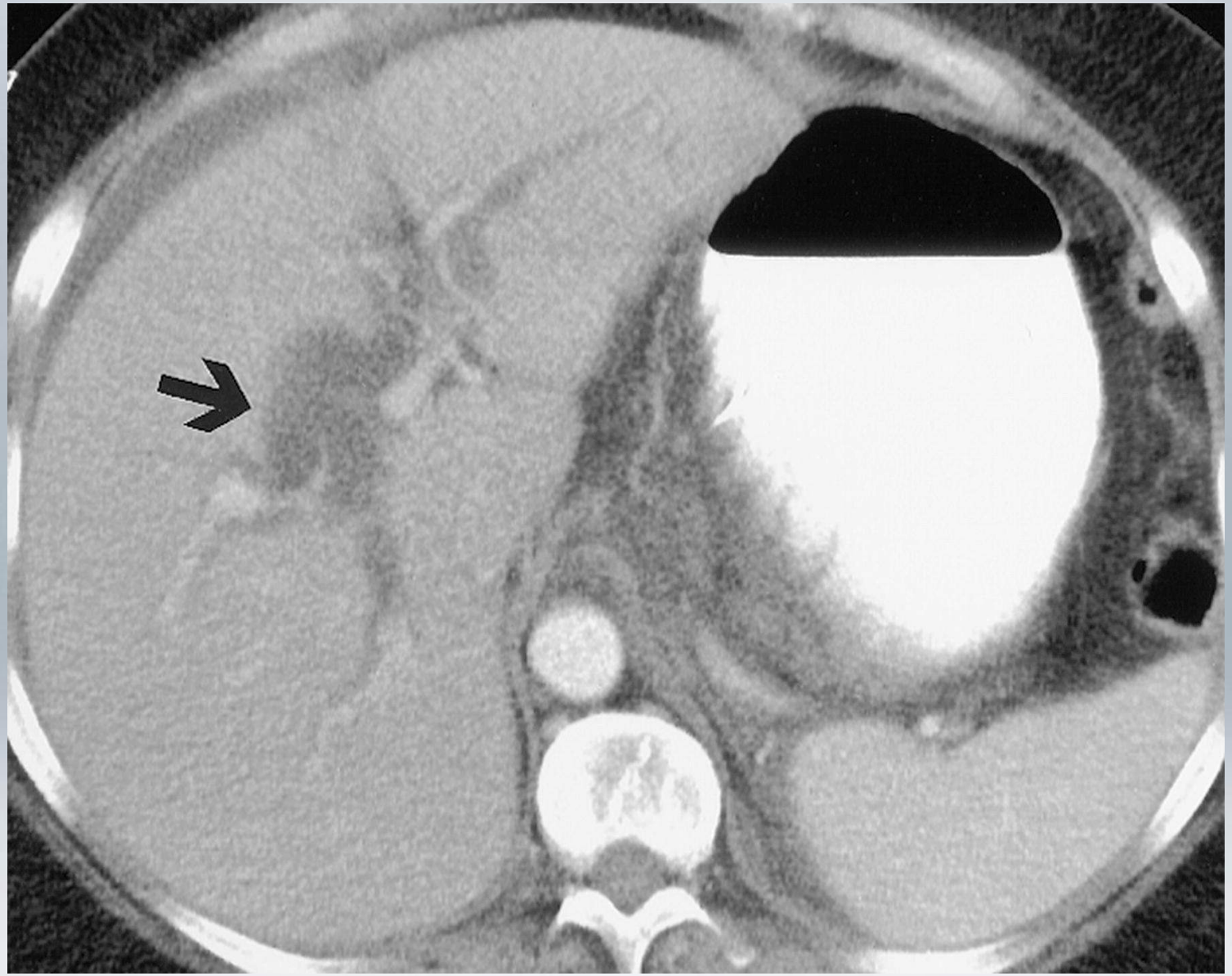
- Pathophysiology (1)
  - Complete of partial mechanical obstruction of afferent limb
  - Passage of food and gastric secretion to efferent limb
  - Triggers release of secretin and cholecystokinin
  - Thereby stimulate secretion of bile, pancreatic enzymes, bicarbonate and water into afferent limb (up to 1-2L/day)

AFFERENT LOOP SYNDROME

- Pathophysiology (2)
  - Mechanical:
  - Early post-operative period: duodenal stump blowout
  - Back pressure to biliopancreatic ductal system: obstructive jaundice, ascending cholangitis and pancreatitis
  - Bowel ischemia, gangrene; perforation and peritonitis

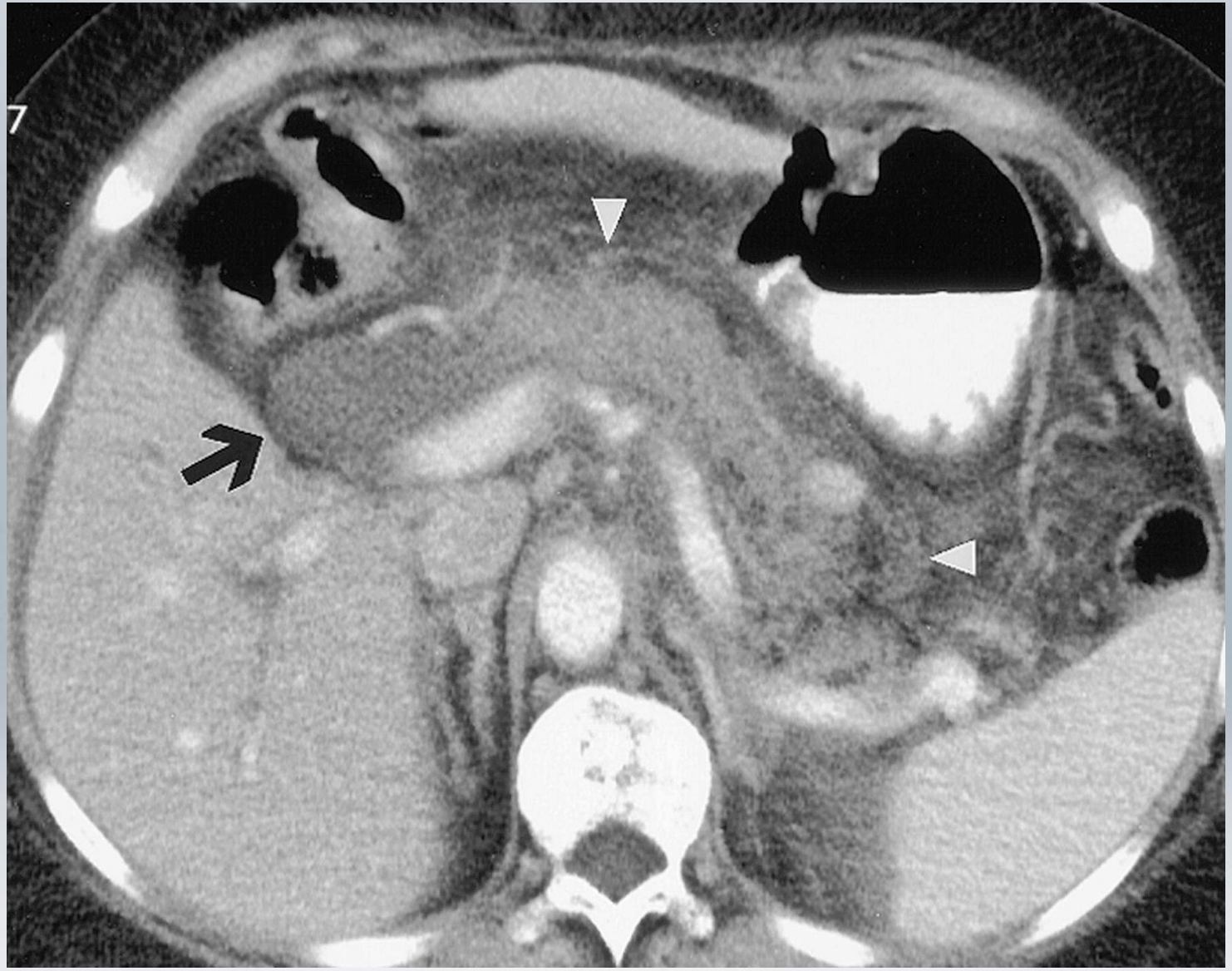
AFFERENT LOOP SYNDROME

- Pathophysiology (3)
  - Microbiological:
  - Partial obstruction
  - Prolonged pooling and stasis and secretions
  - Bacteria overgrow in afferent limb and deconjugate bile acids
  - Steatorrhea, malnutrition



Wise S W Radiology 2000;216:142-145

Dilated intrahepatic ducts



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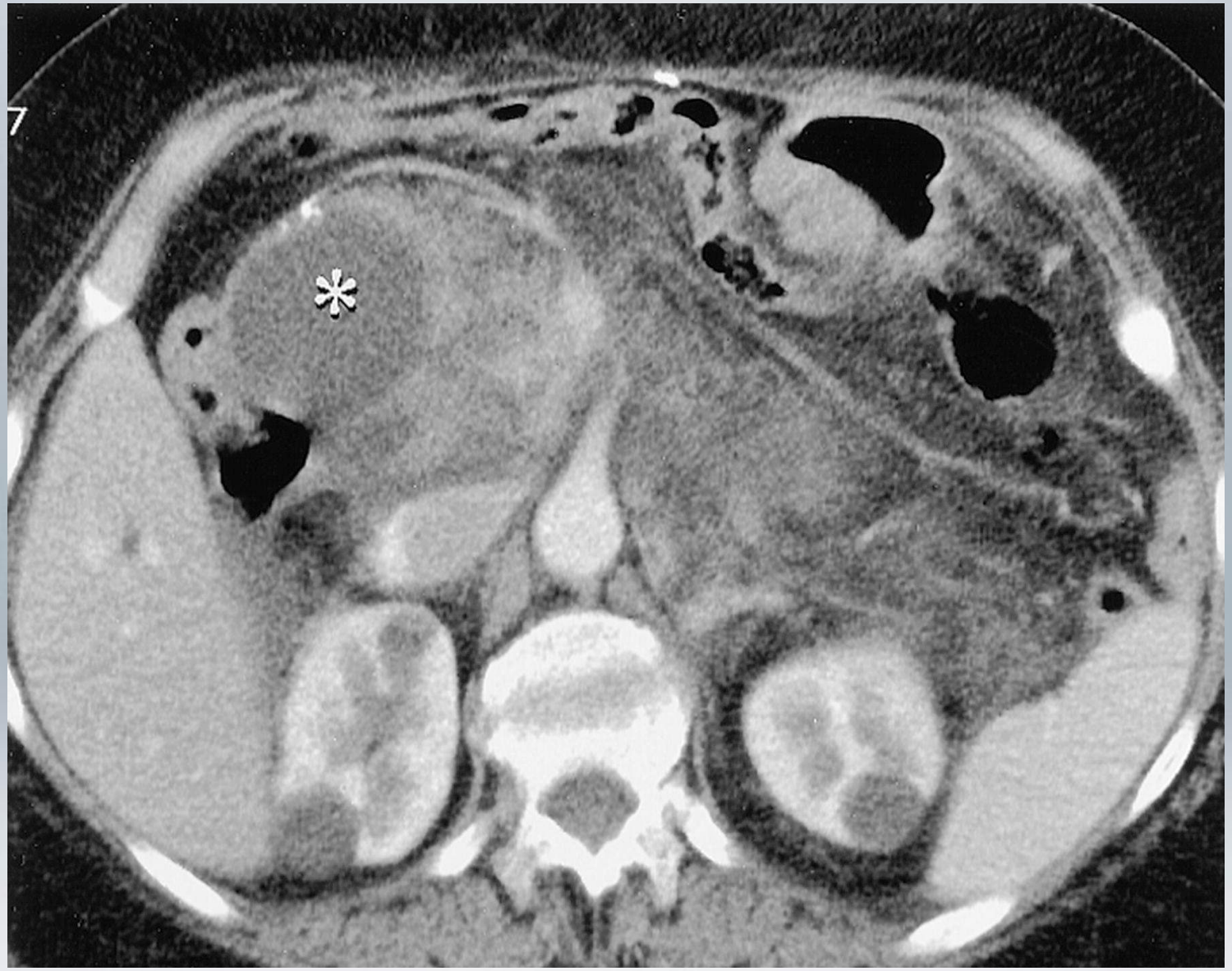
Dilated extrahepatic duct
Peripancreatic fluid and inflammation



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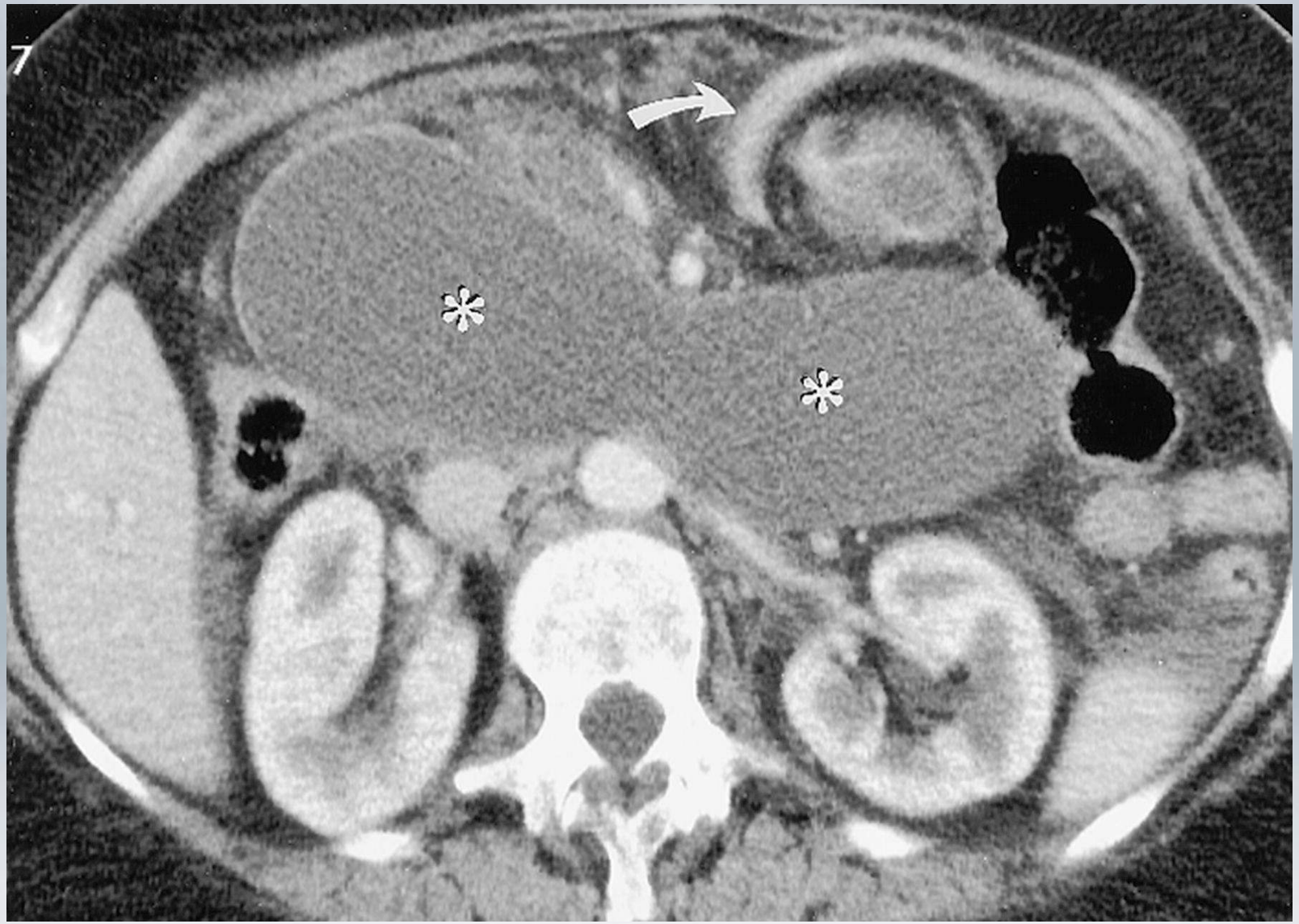
Grossly dilated small bowel



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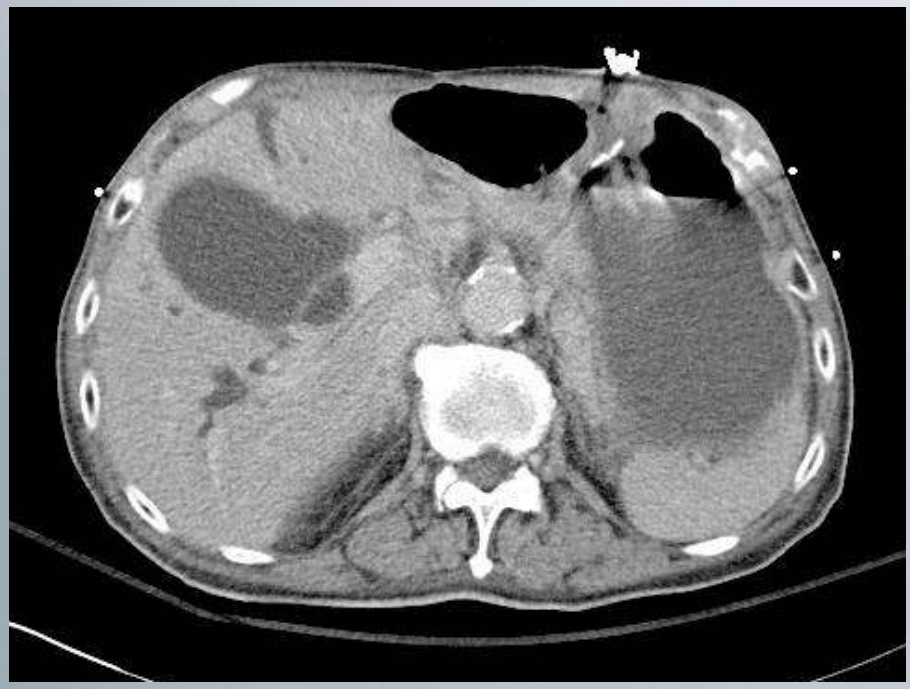
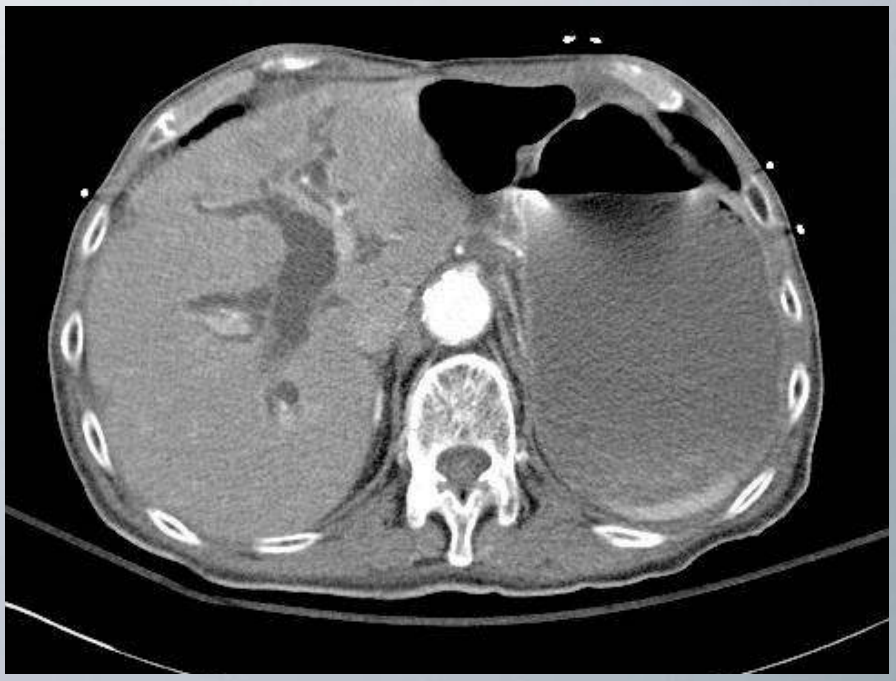
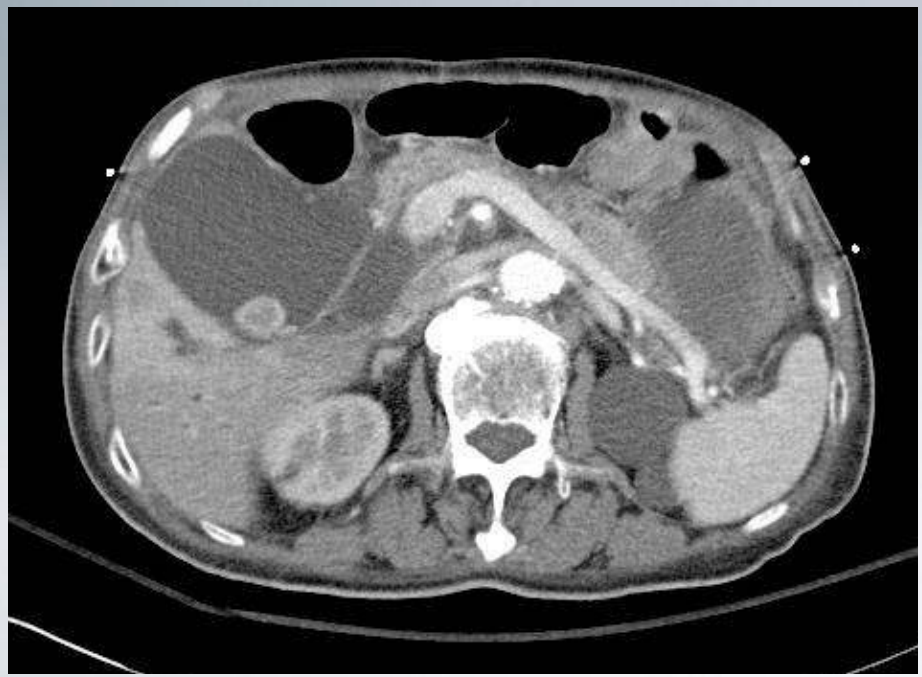
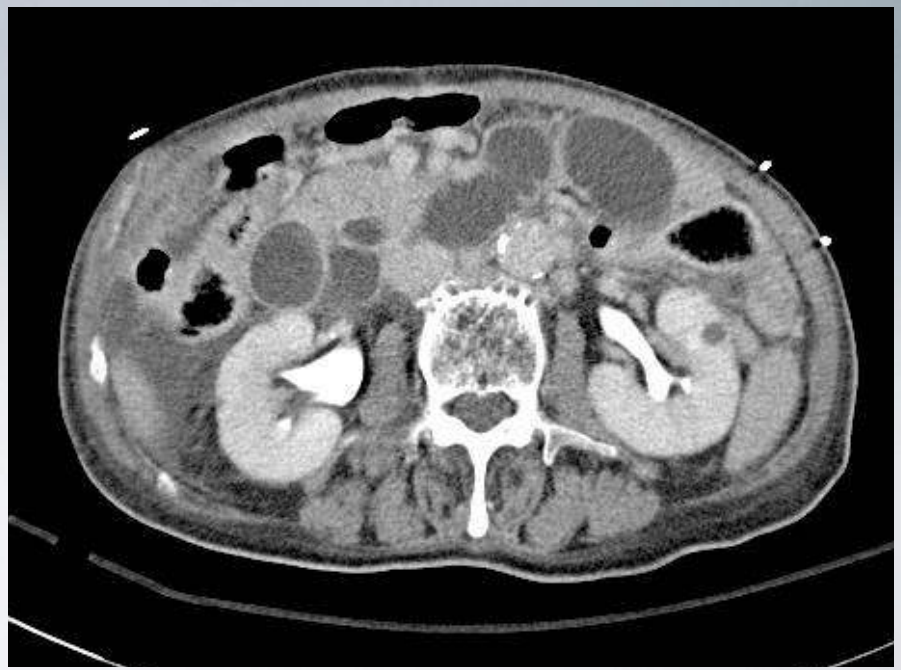
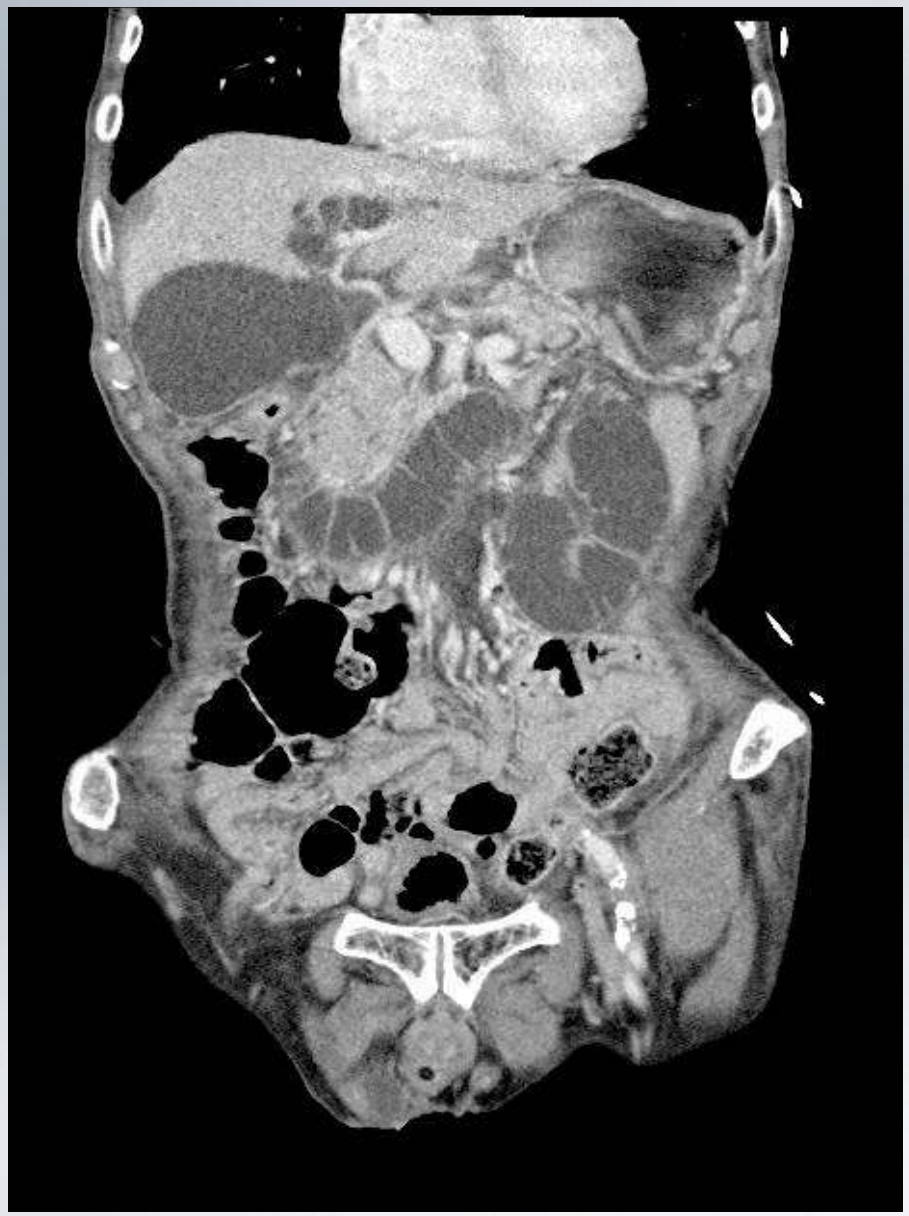
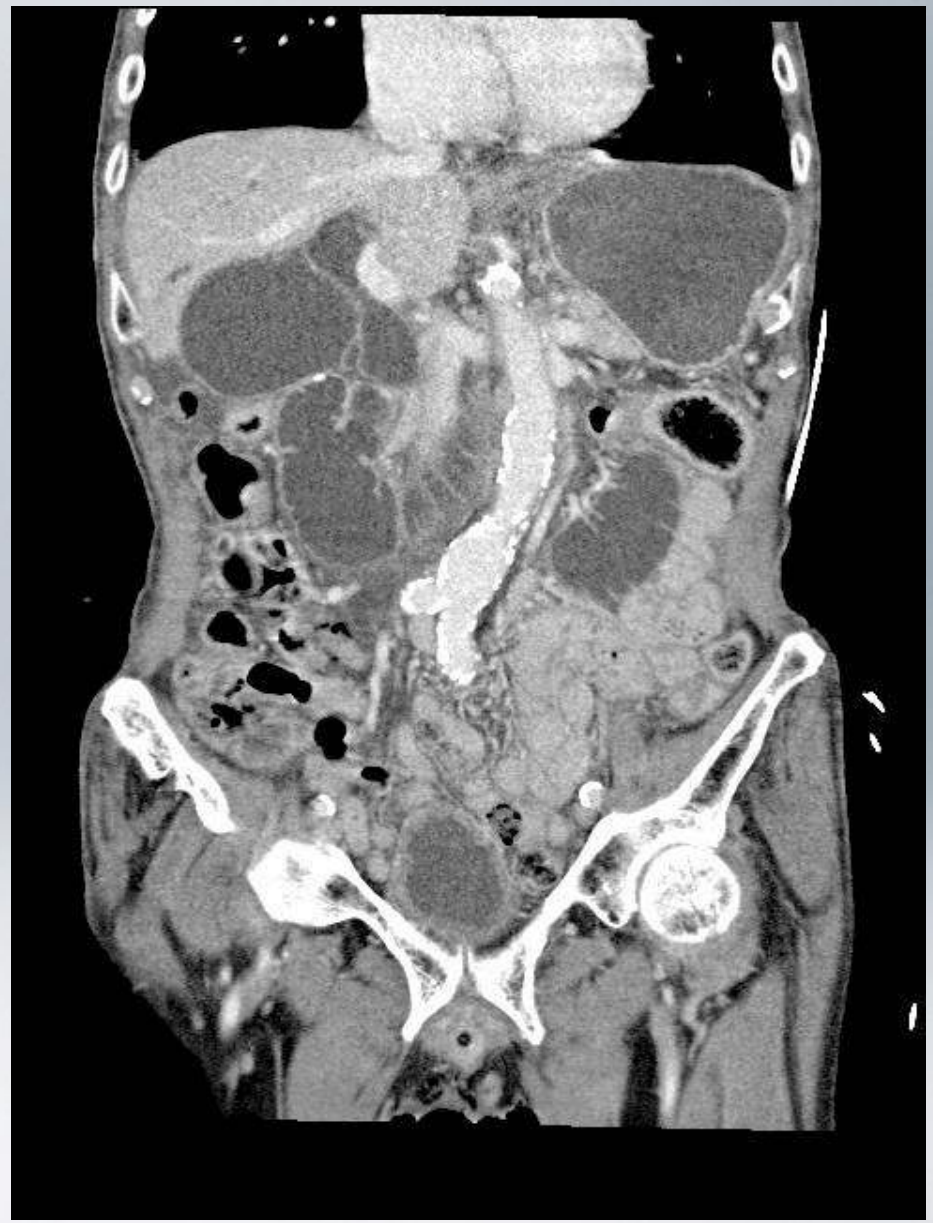





CT images of our patient





CT images of our patient

CASE: M/82
SURGICAL TREATMENT

- Emergency laparotomy
  - Acute kinking of afferent limb by mild adhesions between afferent limb and omentum; moderately dilated but still viable afferent limb
  - Gallbladder with impending rupture, containing 2 stones

CASE: M/82
SURGICAL TREATMENT

- Adhesiolysis
- Side-to-side bypass jejuno-jejunostomy between the afferent and efferent limbs
- Cholecystectomy + intra-operative cholangiogram
  - Dilated ducts but lack of filling defect

AFFERENT LOOP SYNDROME

- Treatment:
  - Emergency surgery is needed in acute afferent loop syndrome
  - Definite surgery is also indicated for chronic cases
  - Revision of gastrojejunostomy
  - Relative contraindication: advanced malignancy and severe debilitation; role of image-guided percutaneous drainage

HAZARDS OF MISDIAGNOSIS

- Delays proper diagnosis and hampers timely surgical treatment
- Pancreatic pseudocyst, right upper quadrant abscess
- Bowel perforation during ERCP
- High vigilance is required for reaching a prompt diagnosis

THANK YOU!