Pancreatic Adenocarcinoma

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September 26, 2008

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Epidemiology

- 40,000 Americans develop each year
- 4th leading cause of cancer death
- 5th leading type of cancer

Epidemiology

- In 2000, 28,300 patients were diagnosed in the U.S.
- 28,200 died of this disease
- Incidence almost = mortality
- Only 1 to 4% of all patients diagnosed survive for 5 year

Stage at Presentation

- 15-20% can undergo surgery
- 40% metastatic: median survival 3-6 months
- 40% locally advanced but no evidence of metastases: median survival 8-12 months

Outcome

- Surgery is the only chance for cure
- 5-year survival after complete surgical resection is still only about 20%
- And only about 15% of people diagnosed with disease are candidates for surgery

Outcome

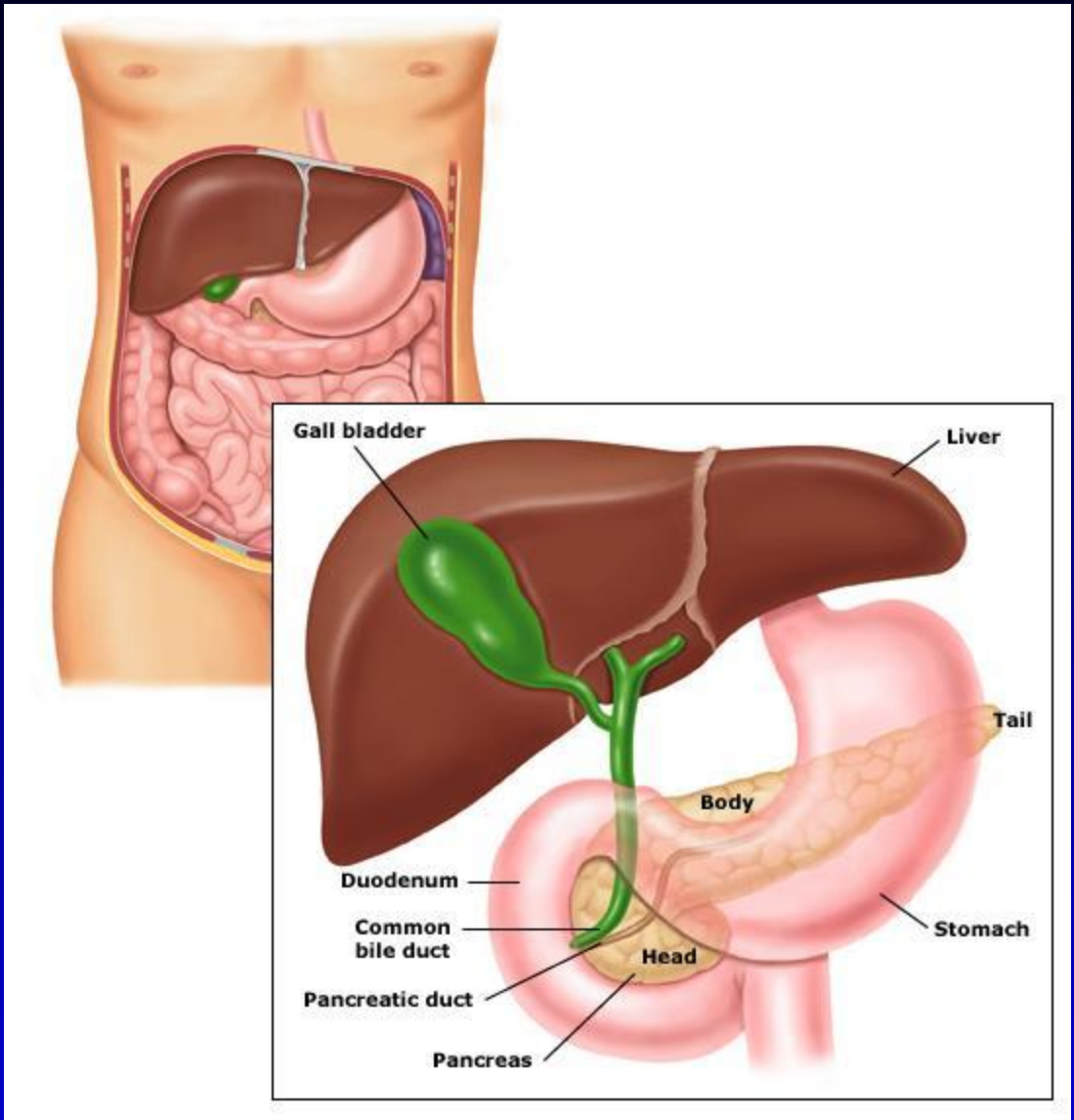
- For patients that cannot undergo surgery, chemotherapy improves disease-related symptoms and survival

- Many recommend gemcitabine single agent therapy for unresectable patients

Risk Factors

- Cigarette smoking increases the risk 2-3 times

- Coffee, alcohol, organic solvents, petroleum products, diabetes, chronic pancreatitis not clear risk factors
- Family history



- **Endocrine: Insulin, glucagon, etc..**
- **Exocrine: Digestion**

Signs and Symptoms

- Pain, weight loss, jaundice

Diagnosis

- US = ultrasound
- CT = cat scan
- ERCP = endoscopic retrograde cholangiopancreatography
- PTC = percutaneous transhepatic cholangiogram
- MRCP = magnetic resonance cholangiopancreatography
- EUS = endoscopic ultrasound

Evaluation of presumed pancreatic cancer

Physical Exam, Lab,
repeat CT (Pancreas protocol)

↓

Endobiliary Stent
EUS - FNA

↓

Review available treatment options

** In contrast to exploratory laparotomy and intraop assessment of resectabilty*

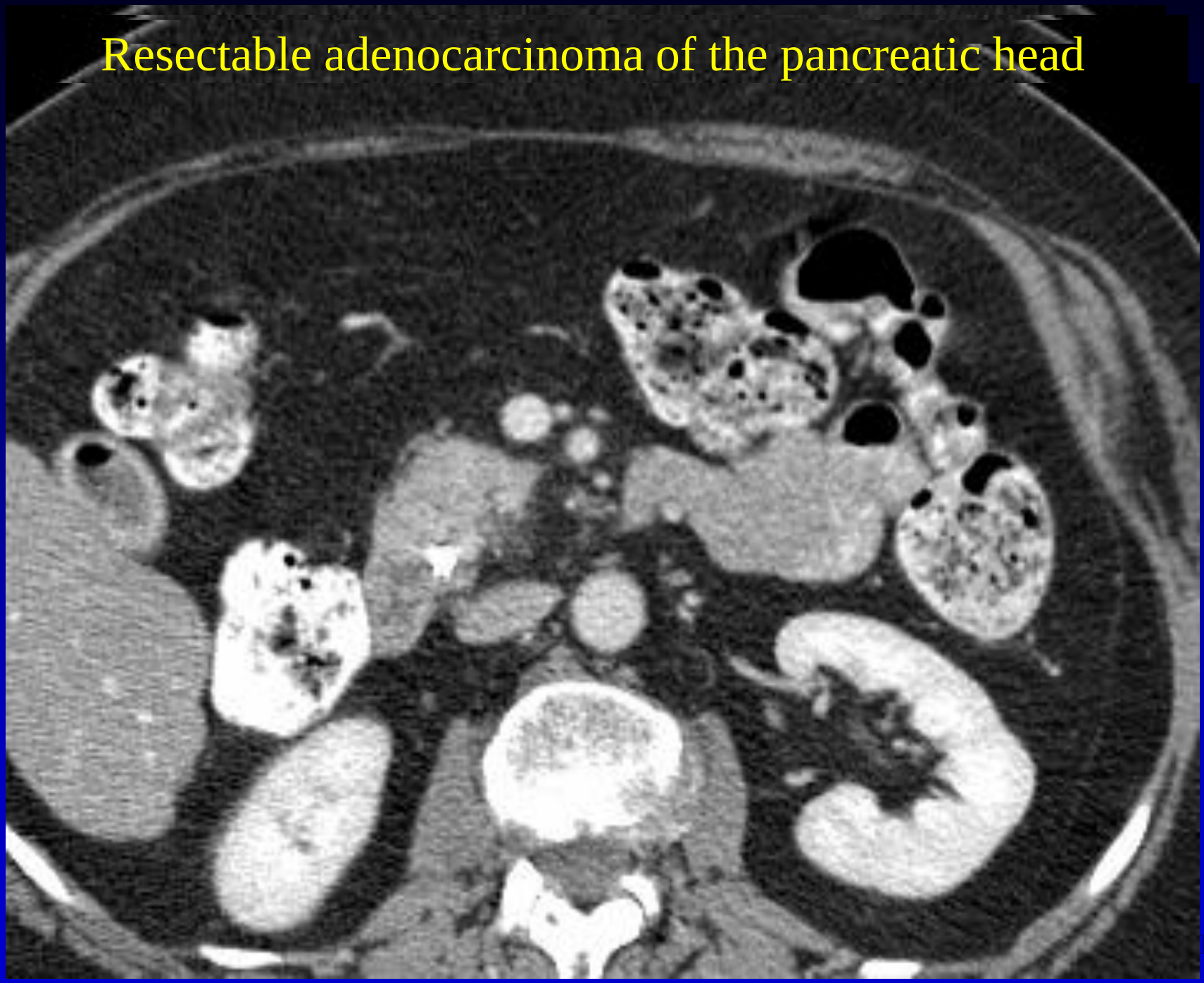
CA19-9
Best lab test we have but not good enough for screening

- Elevated in pancreatic cancer, biliary cancer, hepatocellular and many other cancers
- But also elevated with cholangitis, cirrhosis, and any other disease that increases bilirubin (jaundice)
- Data are insufficient to use CA19-9 as response to treatment

CT Criteria for Resection

- No extrapancreatic disease
- No extension to celiac/SMA
- Patient SMV/PV

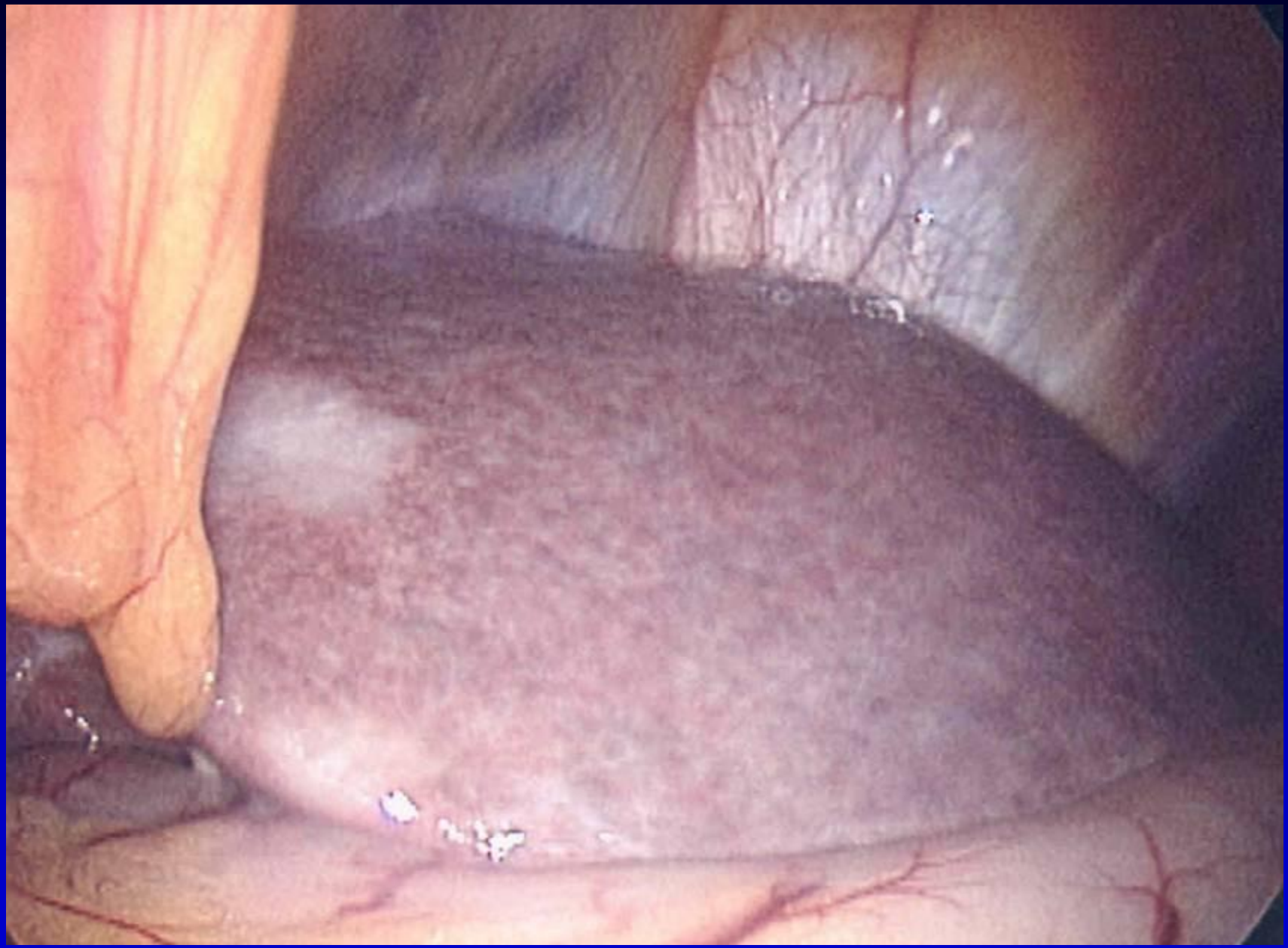
Resectable adenocarcinoma of the pancreatic head



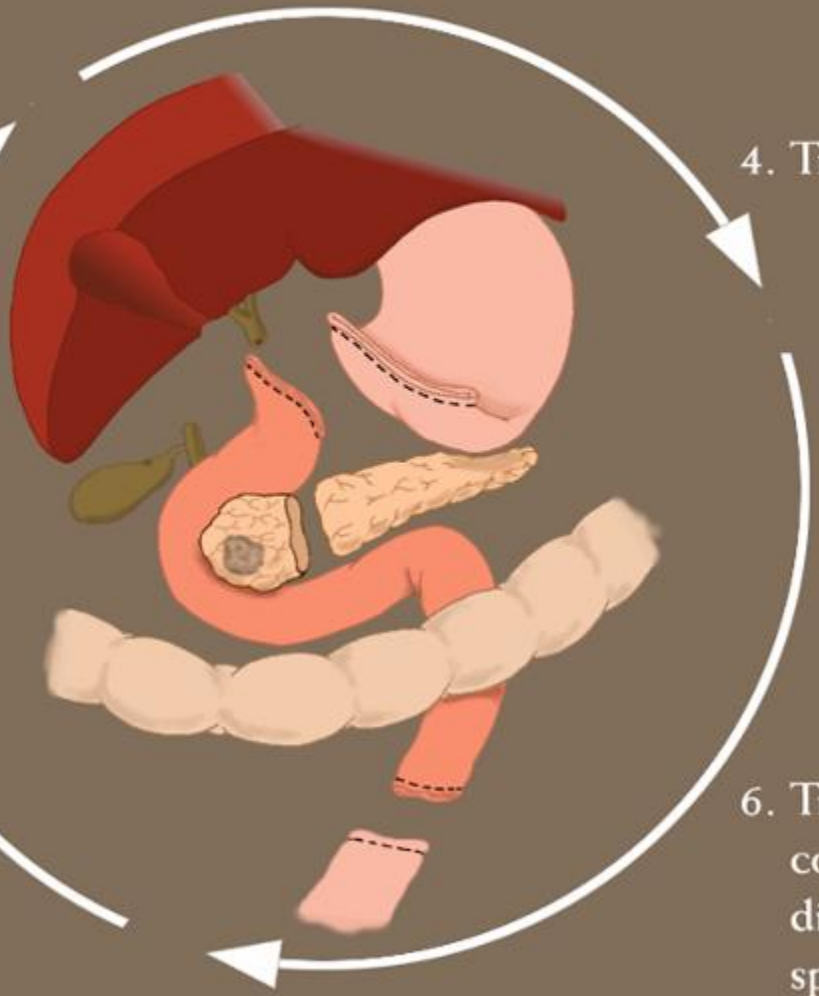
Laparoscopy
detection of CT-occult M1 disease

4-13%

Assuming high-quality CT



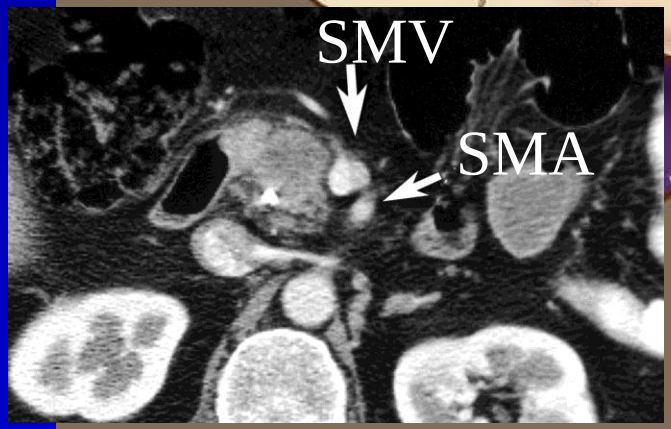
Clockwise Resection



1. Cattell-Braasch maneuver exposing SMV
2. Extended Kocher maneuver
3. Portal dissection
4. Transect stomach
5. Transect jejunum and dissect Ligament of Treitz rotating duodenum under mesenteric vessels
6. Transect pancreas and complete retroperitoneal dissection by removing specimen from SMA

Intraoperative Assessment of Resectability

Do not do this anymore



Duodenum

Tumor

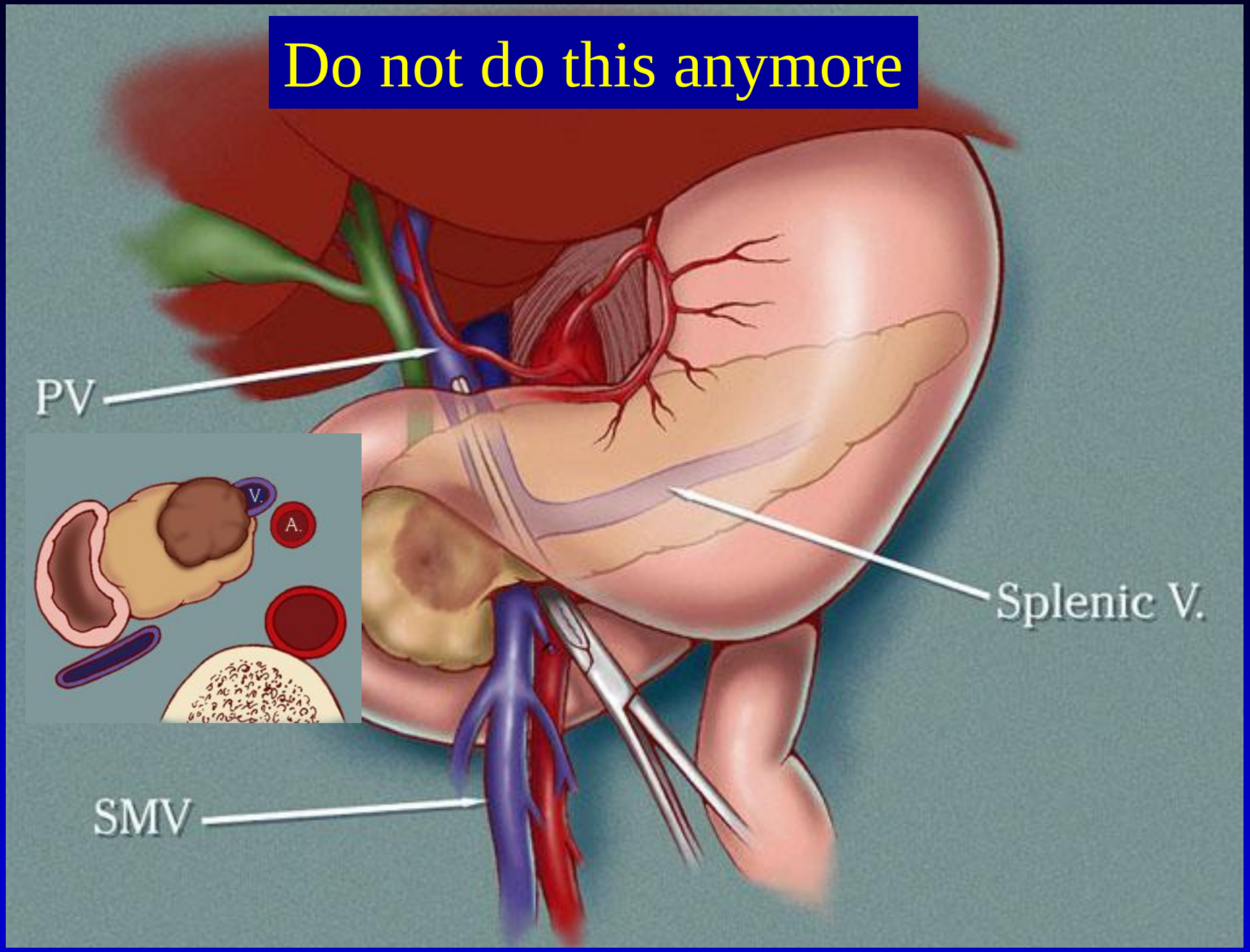
Superior Mesenteric V.

Superior Mesenteric A.

Aorta

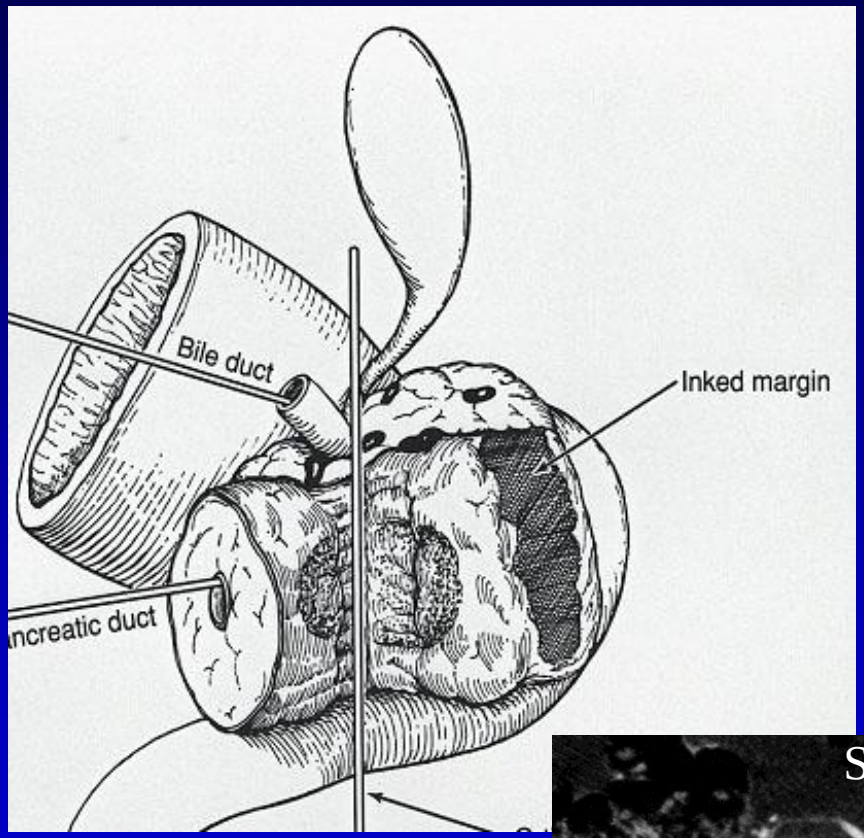
Inferior Vena Cava

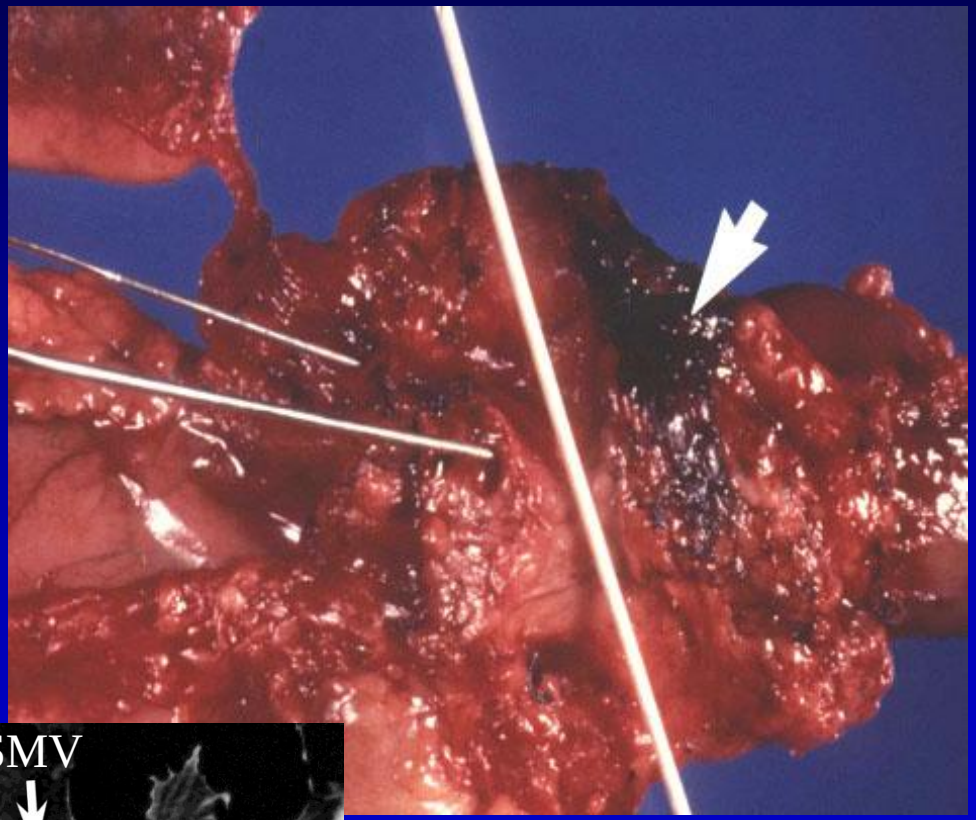
Do not do this anymore

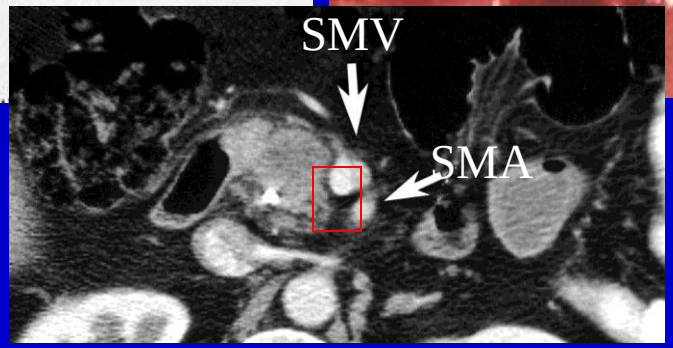


Retroperitoneal Margin

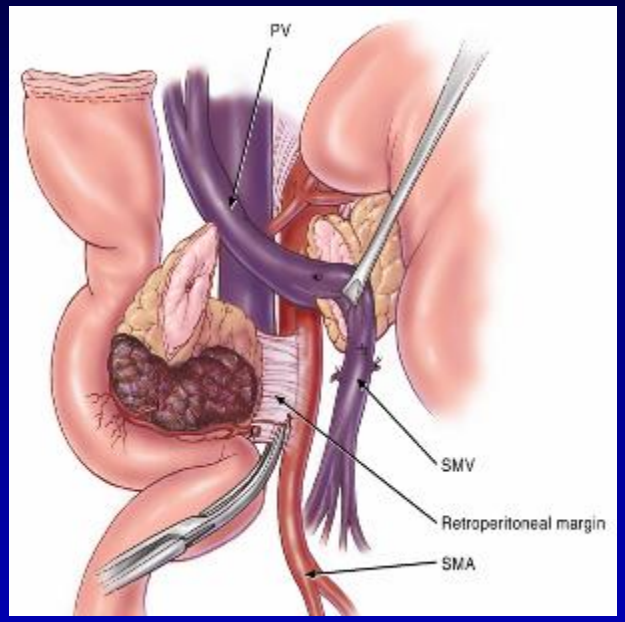
Evaluate adequacy of preop staging / surgical technique

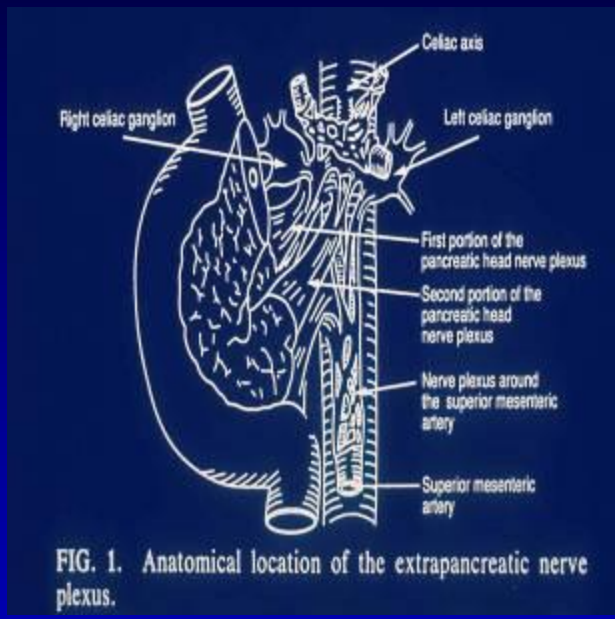






Causes of a Positive Retroperitoneal Margin





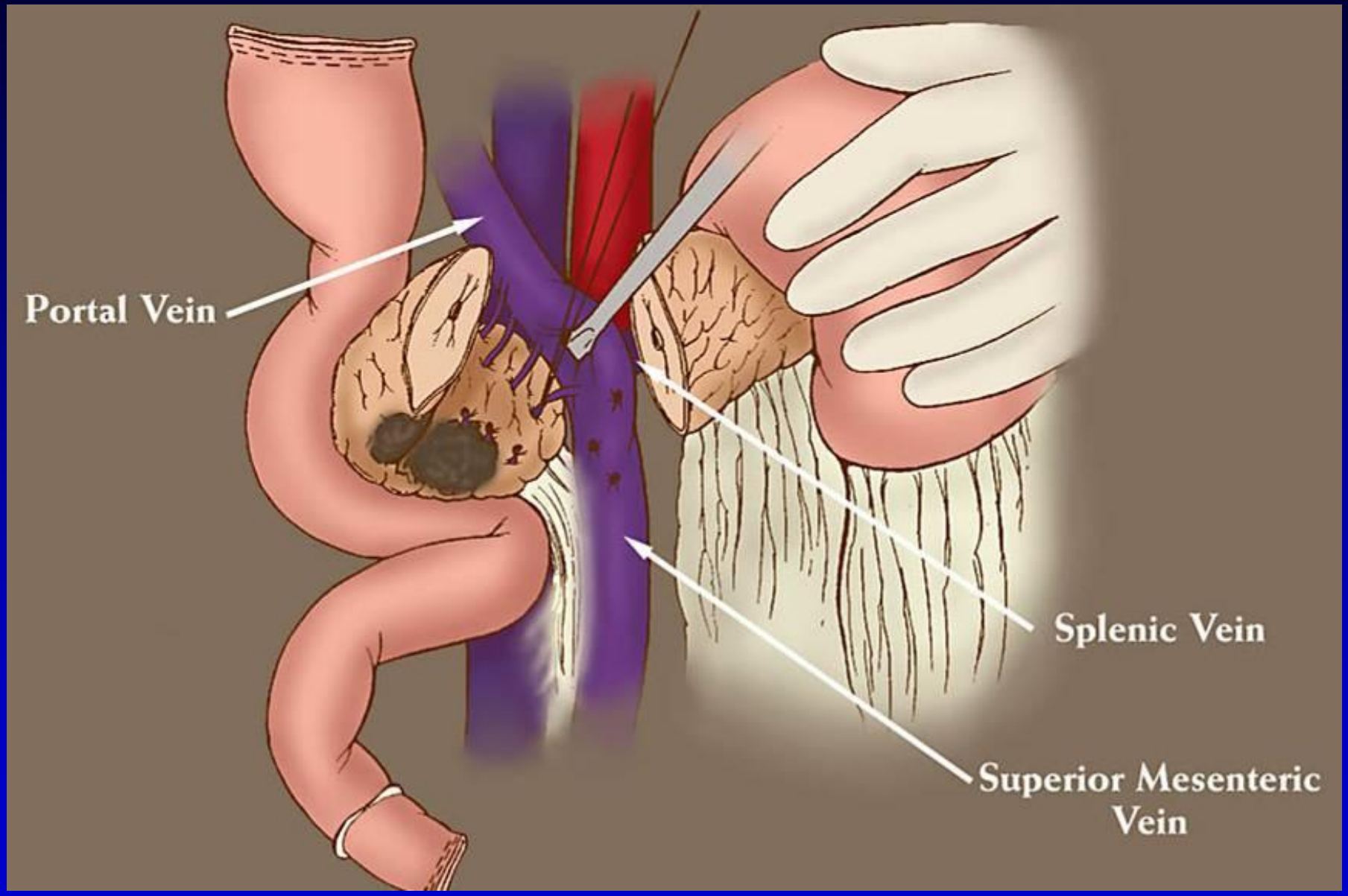
Patient Selection

Technique

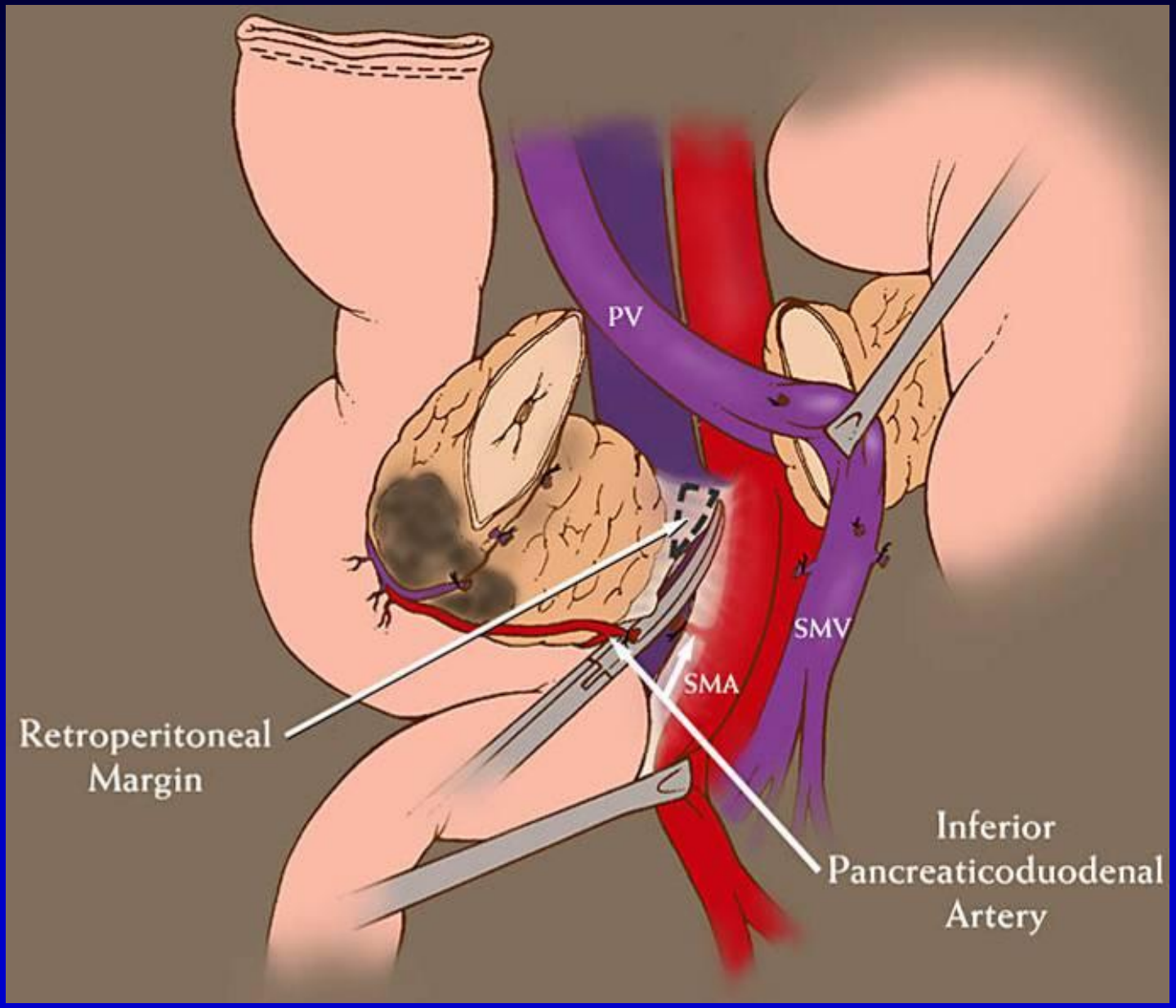
Biologic

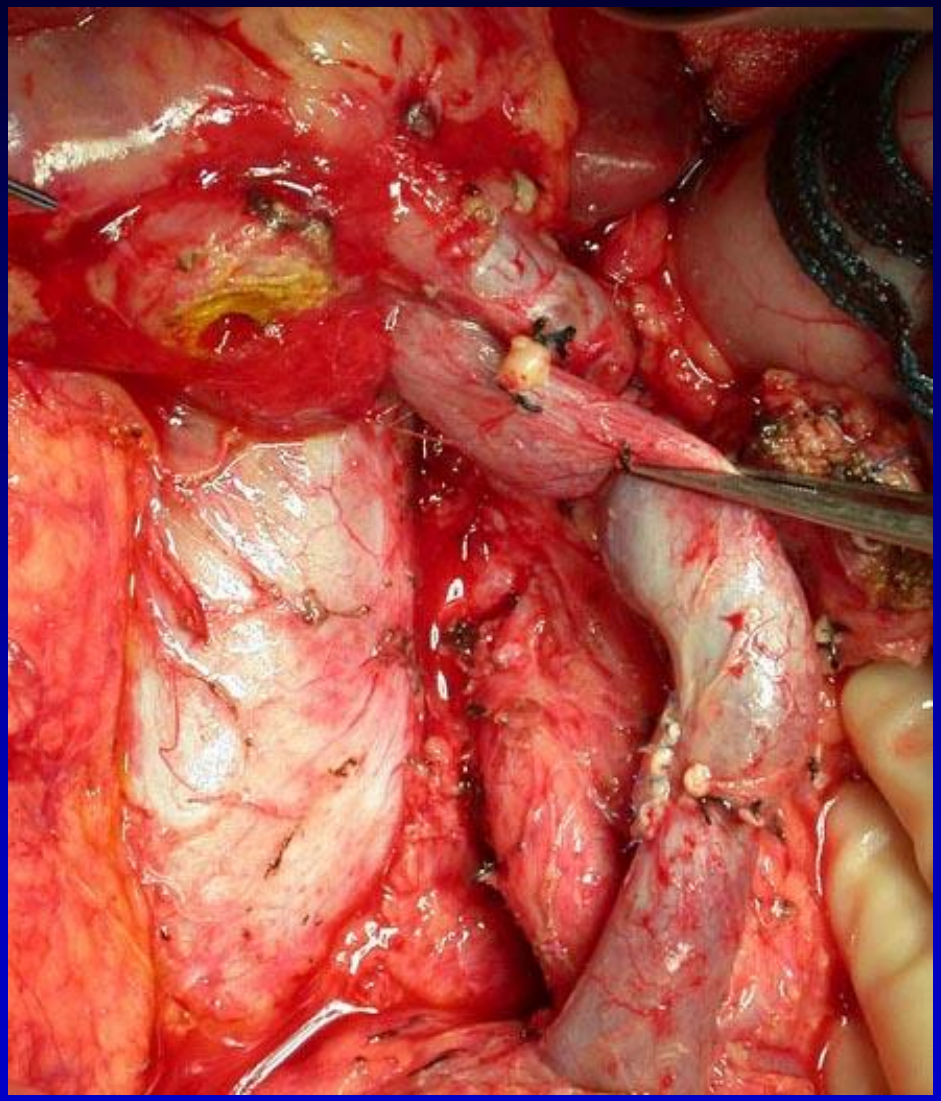
Under physician control

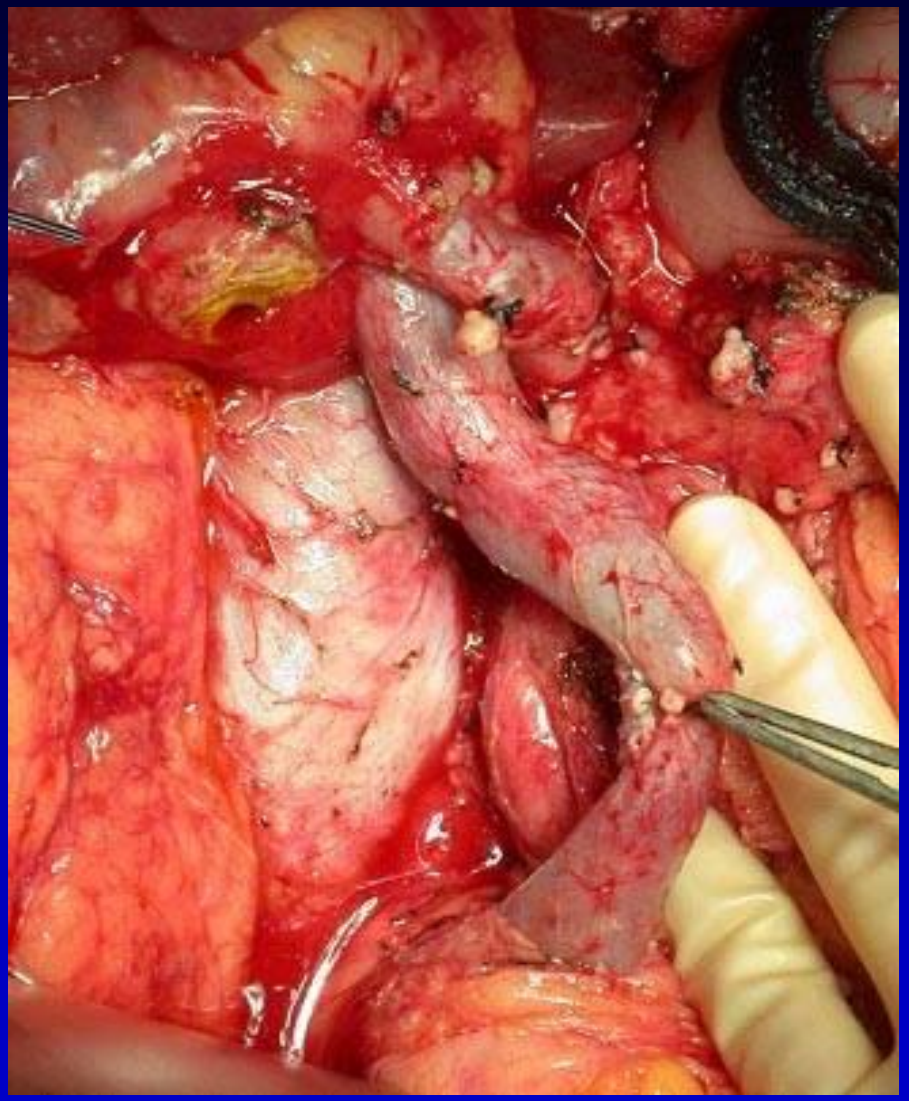
Step 6 part A: Mobilize the SMV/PV from the pancreas



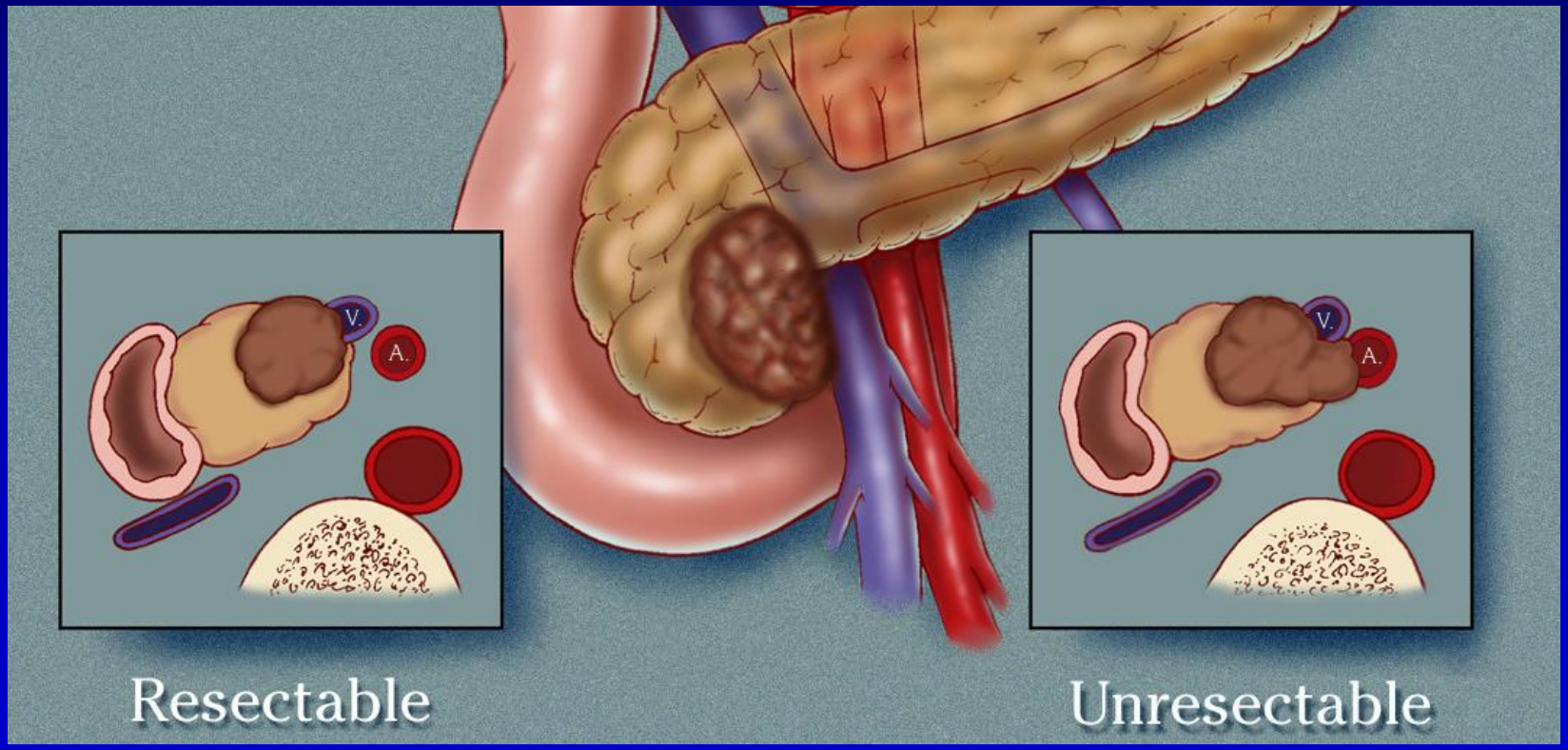
Step 6 Part B: SMA dissection



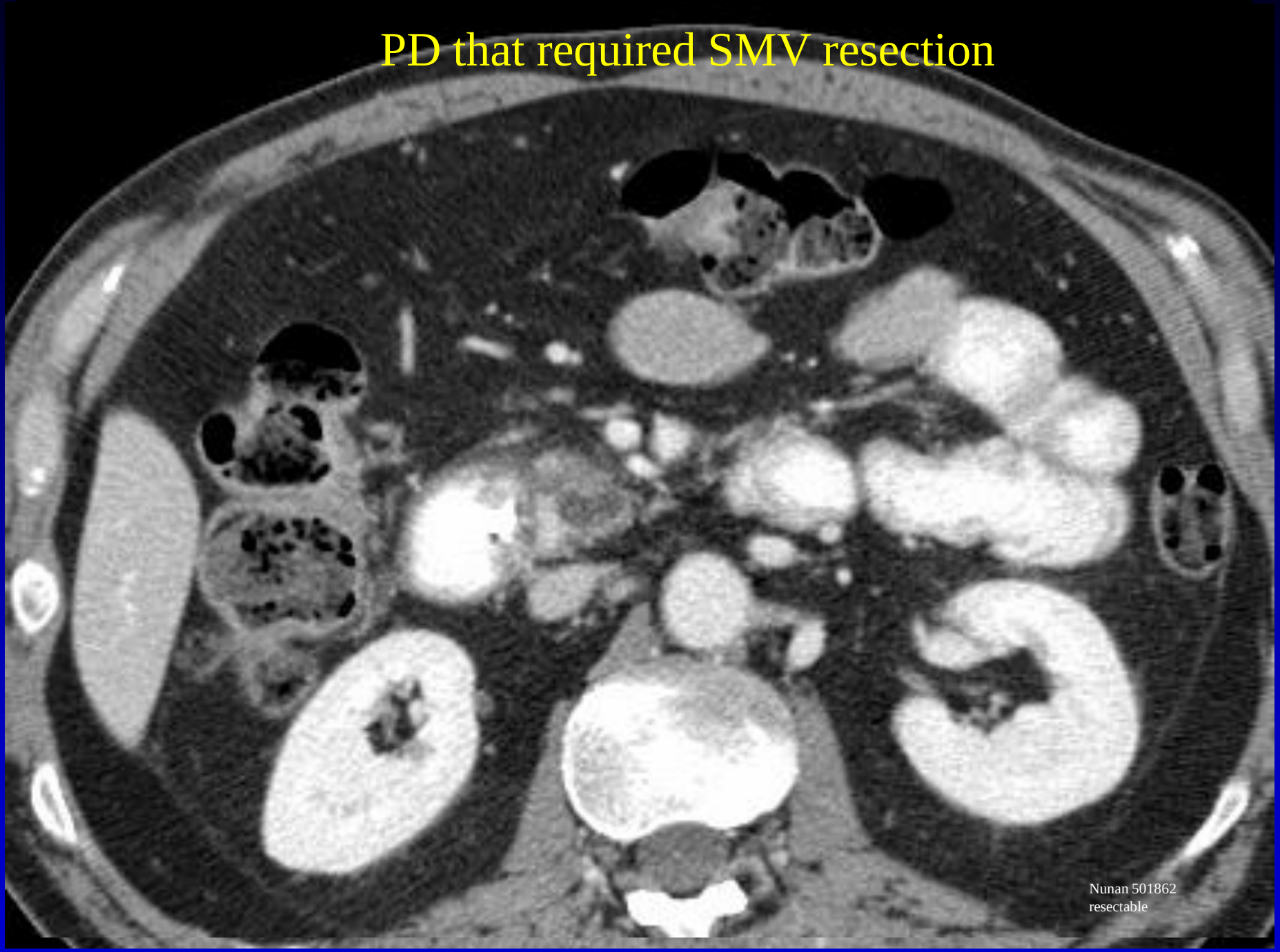




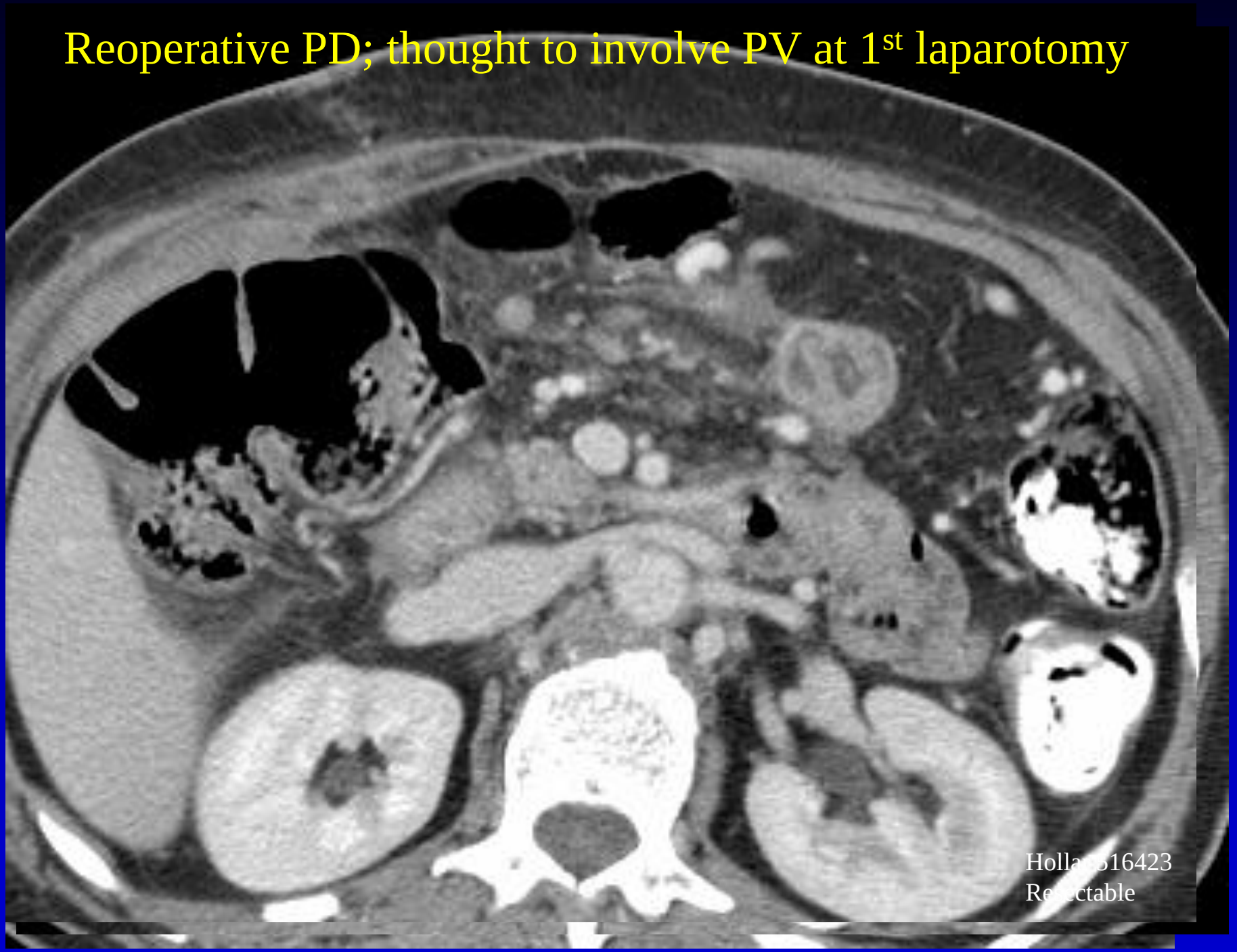
Surgical Resection for Superior Mesenteric Vein Involvement

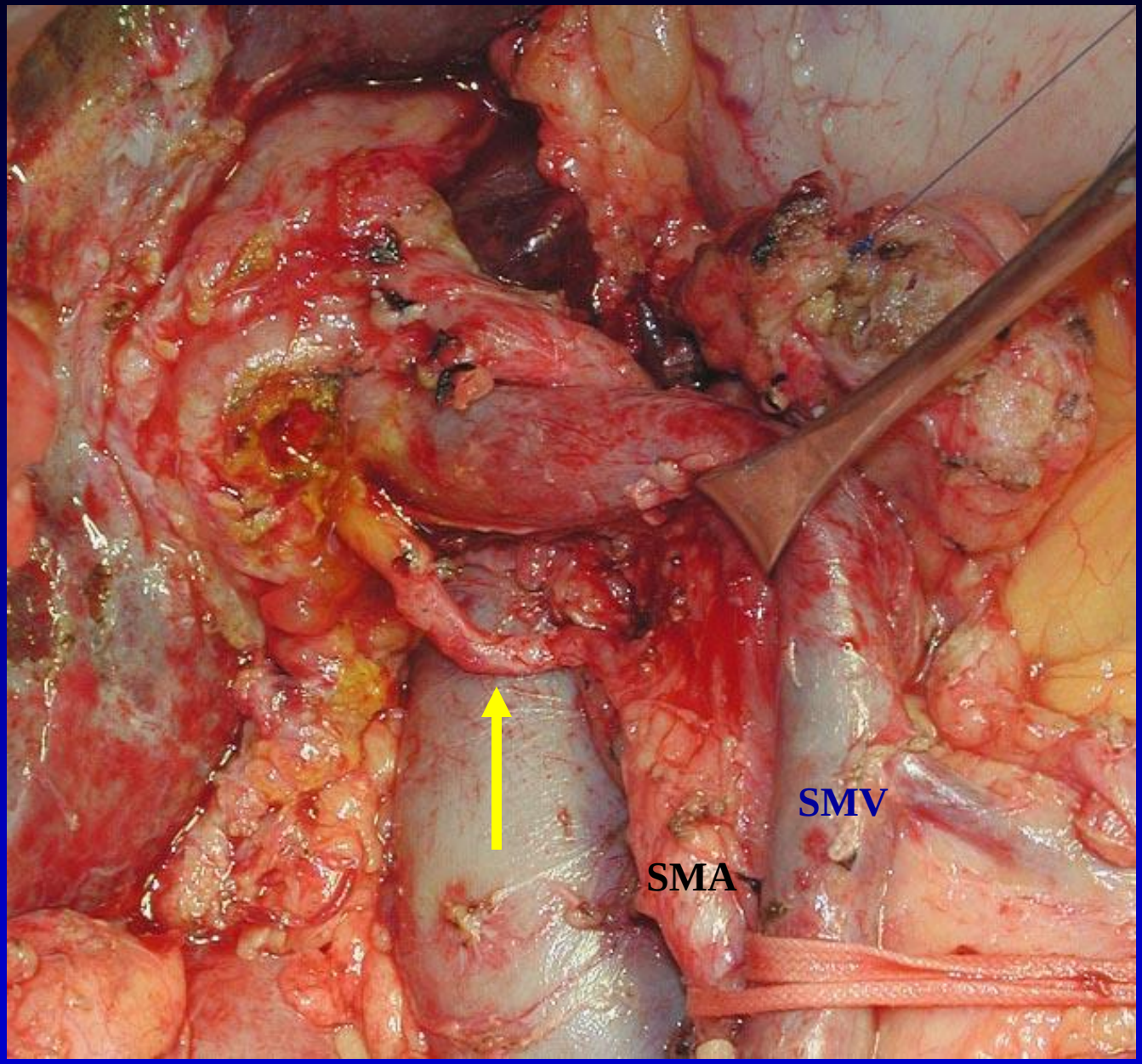


PD that required SMV resection



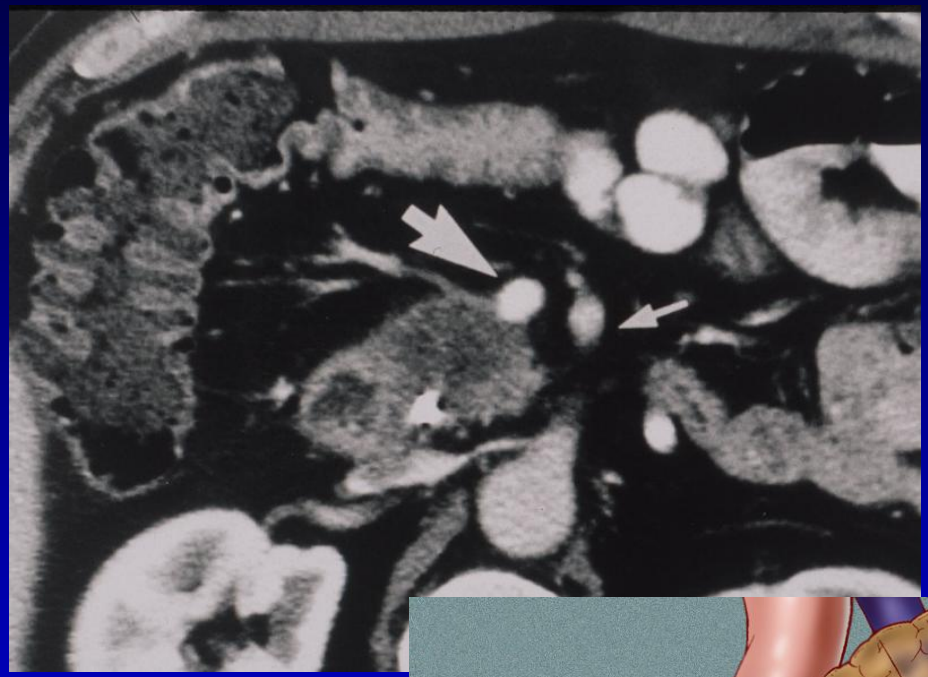
Reoperative PD; thought to involve PV at 1st laparotomy

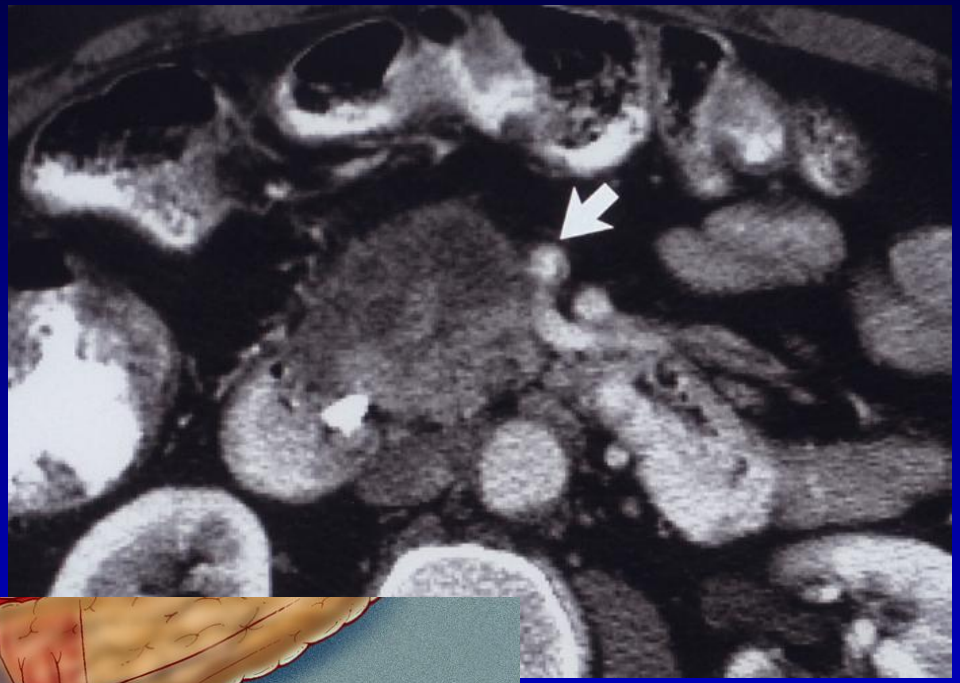


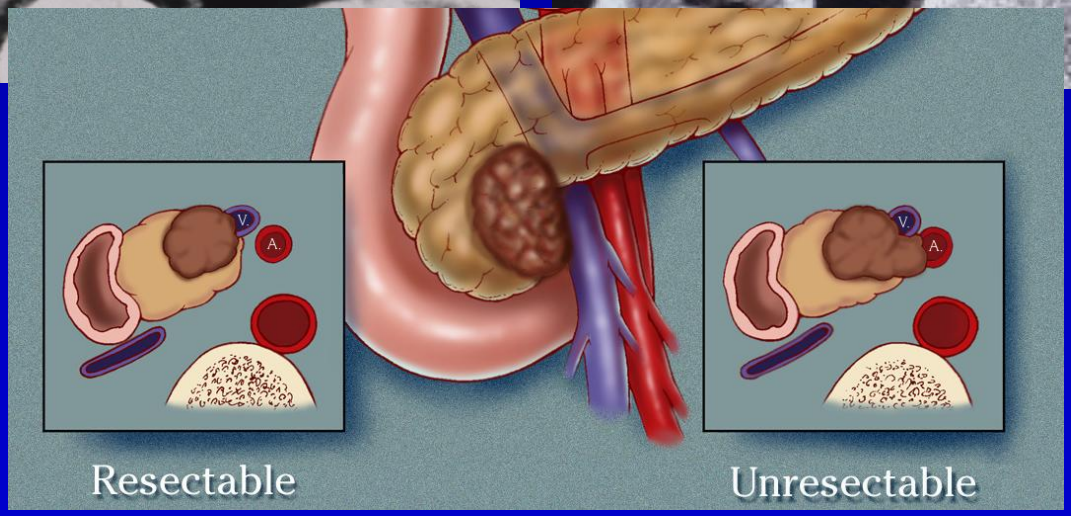


Replaced right hepatic artery

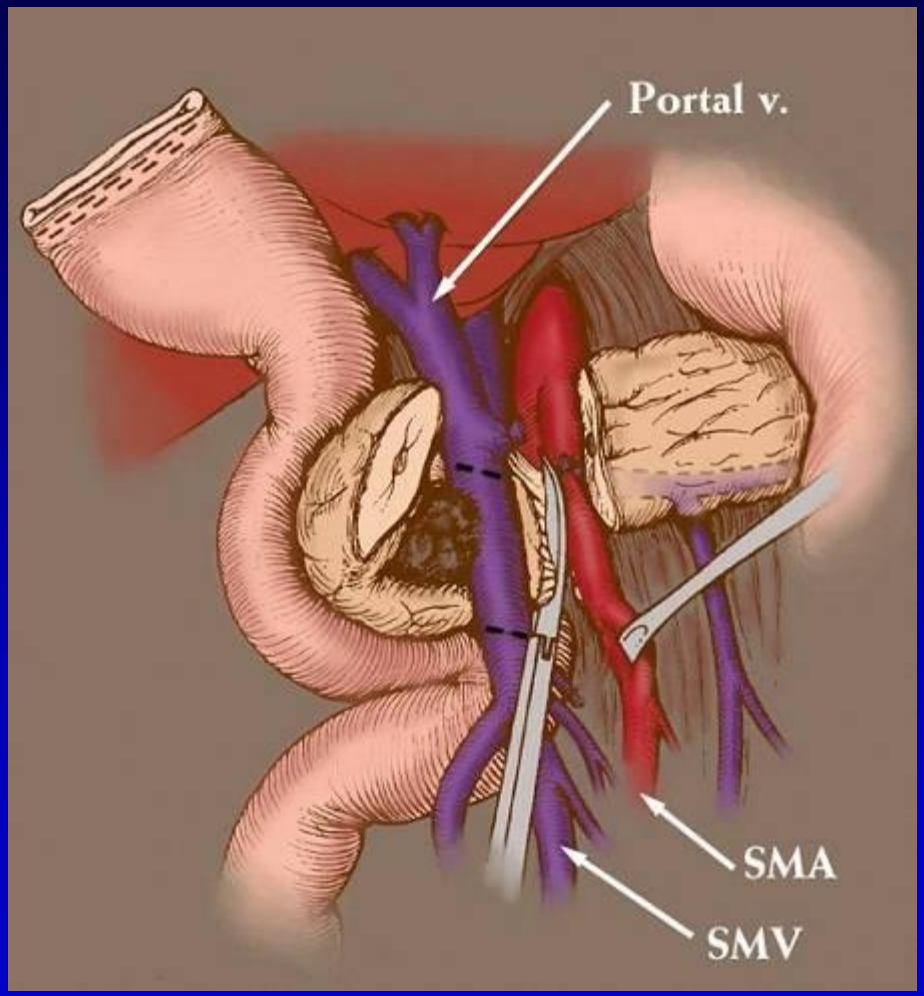
Resectable : likely to require venous resection

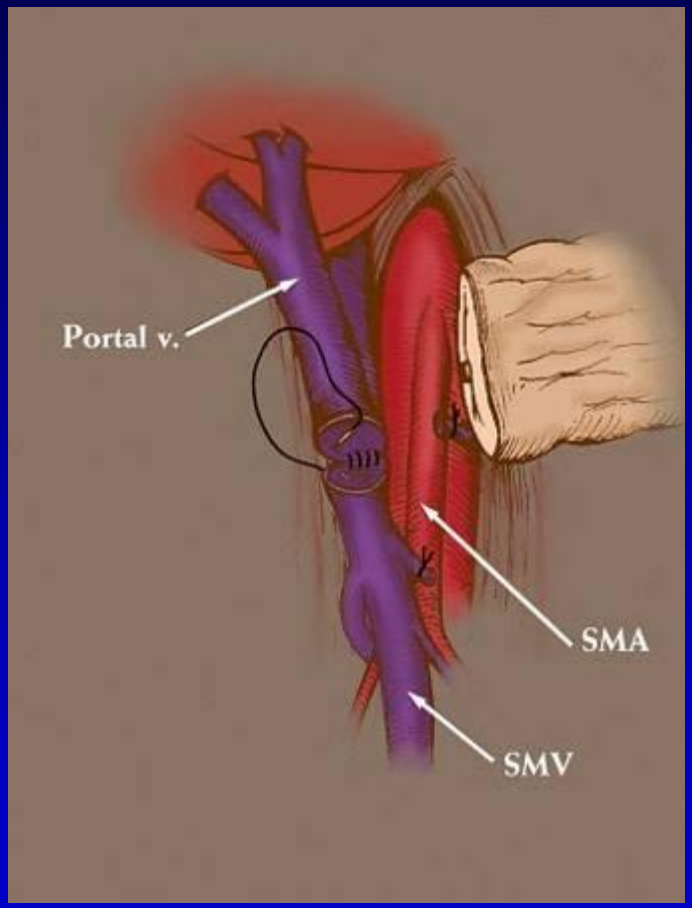


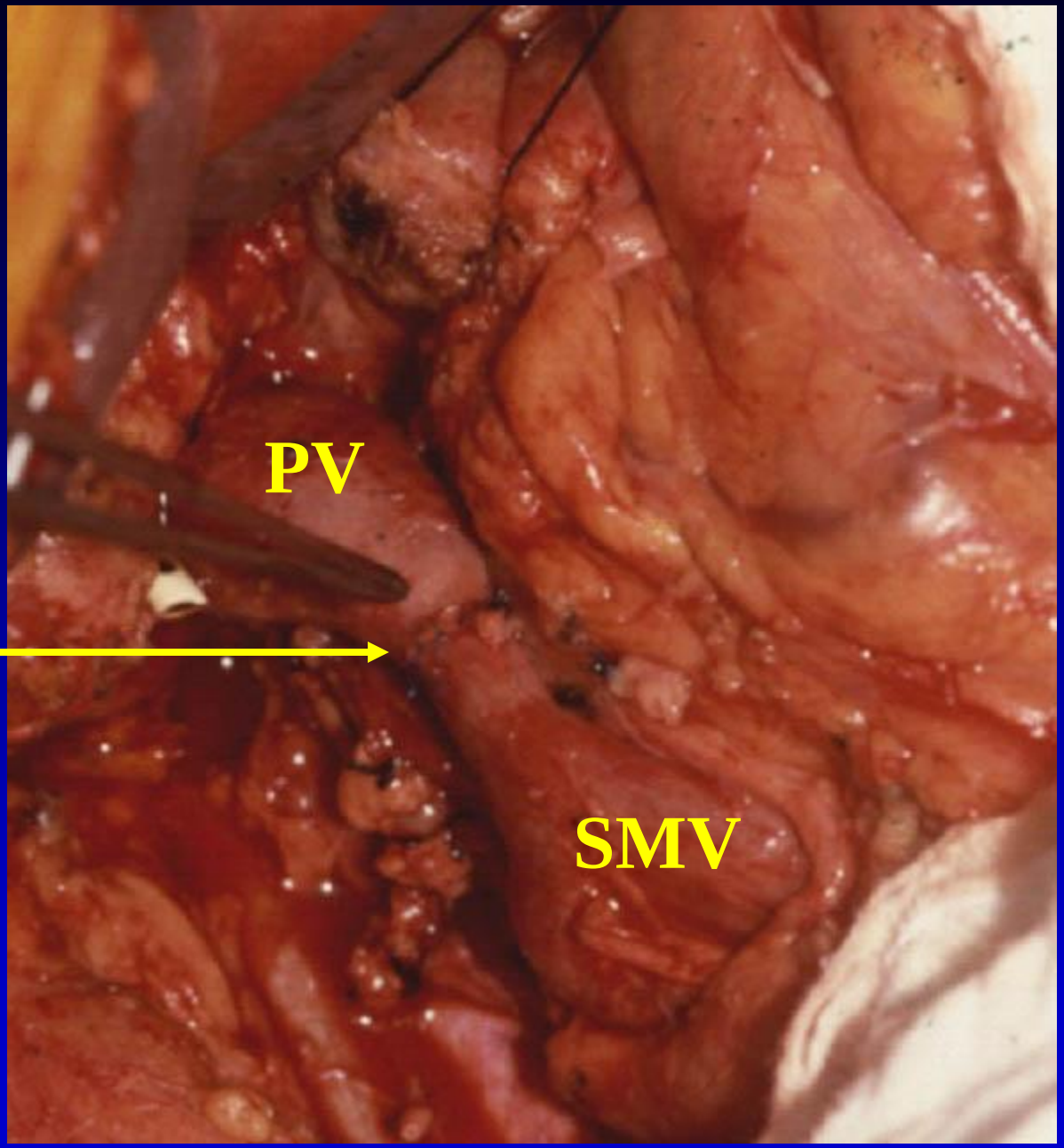




SMPV resection with ligation of the splenic vein

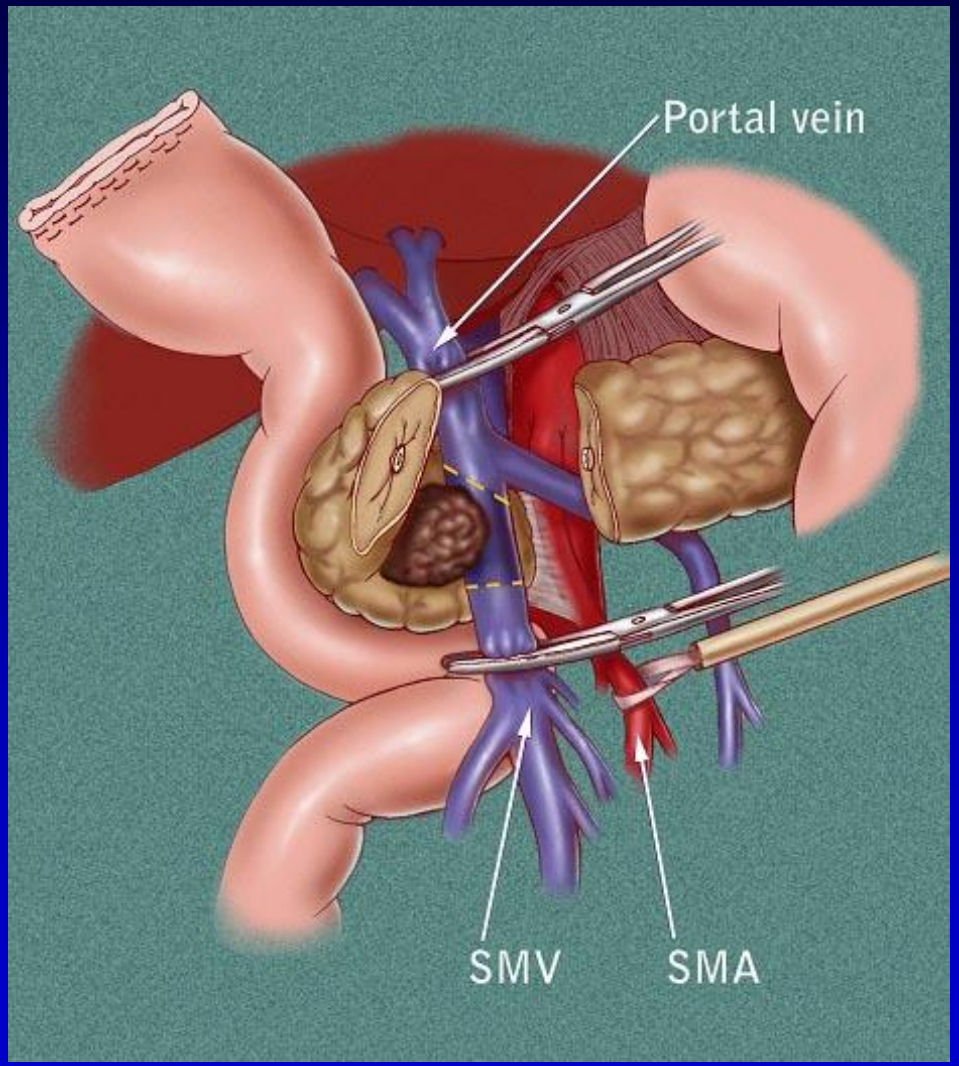


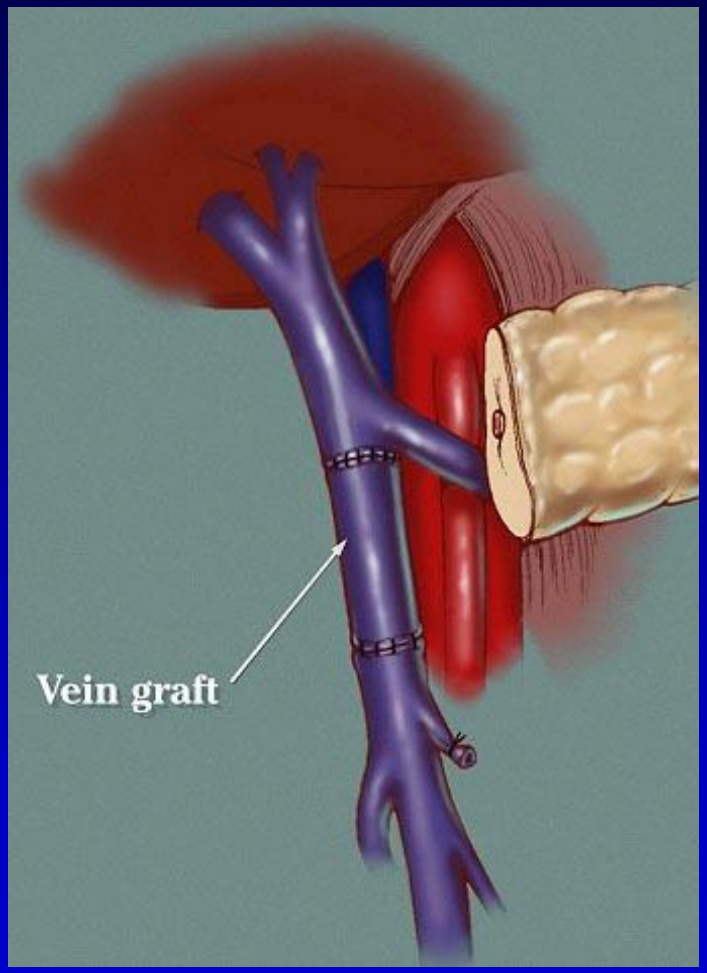




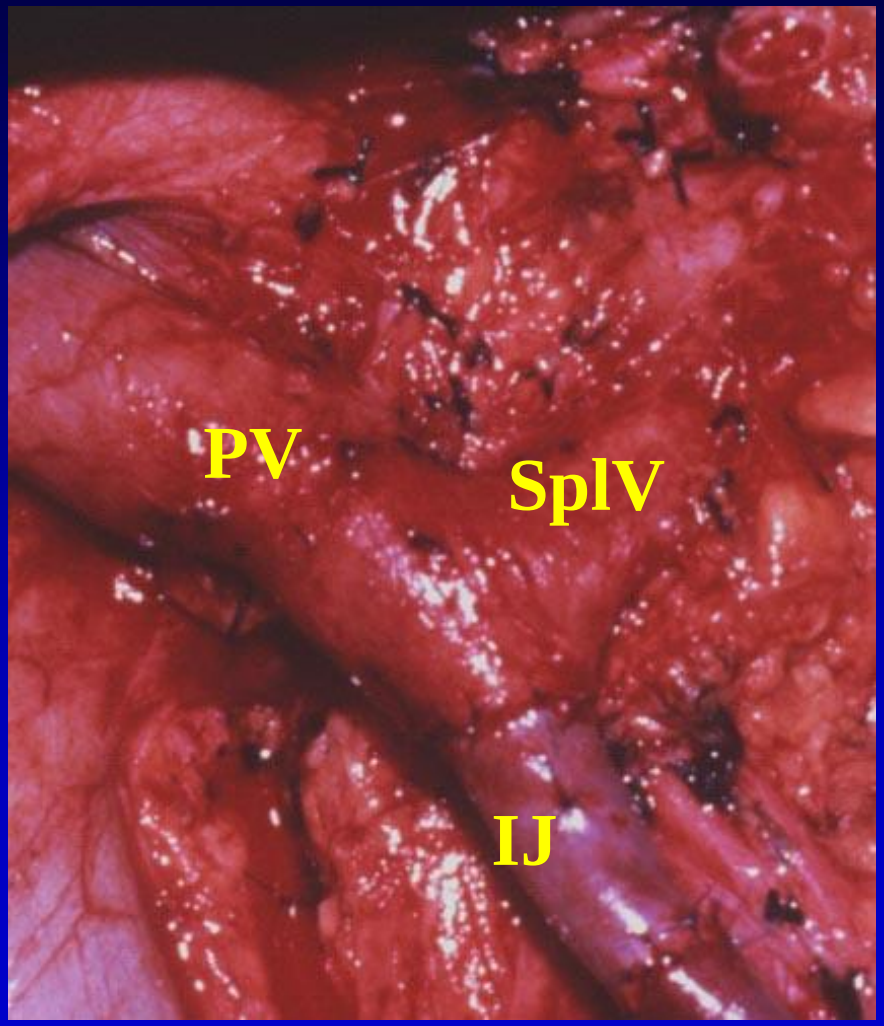
6-0 prolene

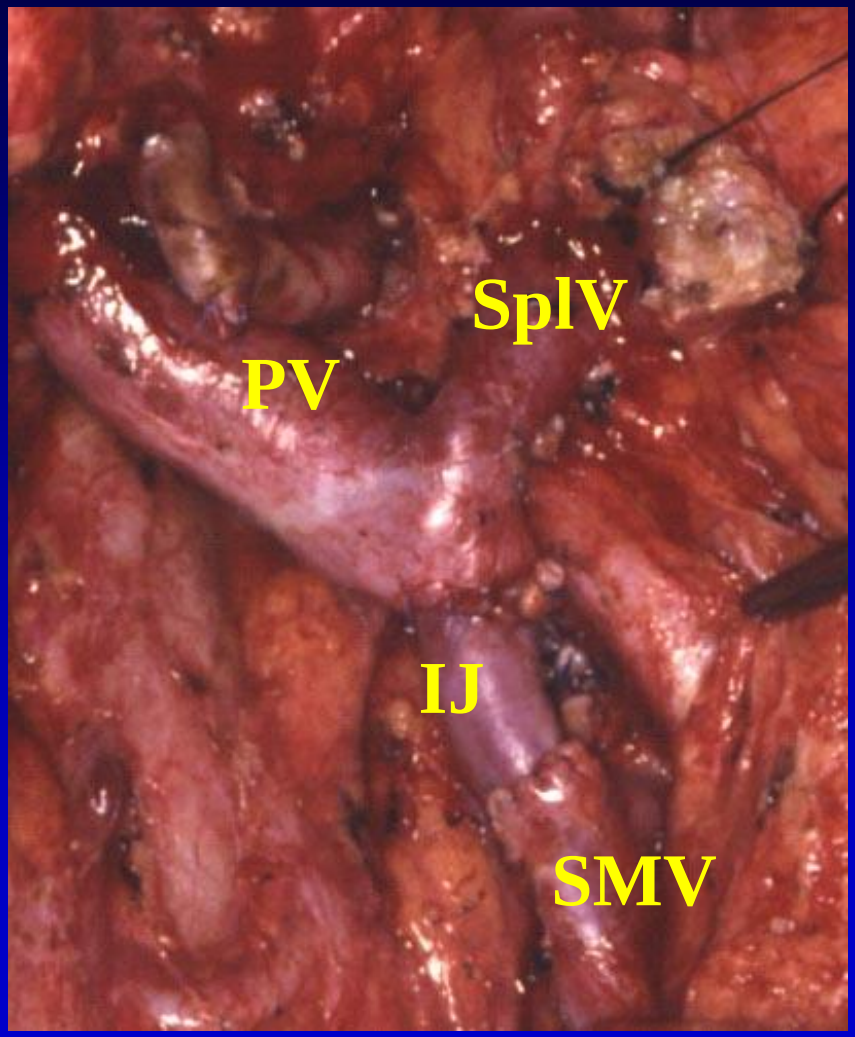
SMPV resection with preservation of the splenic vein

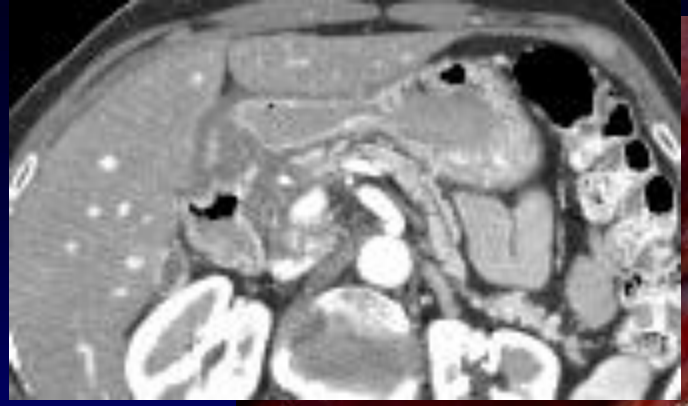




SMV reconstruction with IJ vein







Rev saph
vein graft

divided
bile duct

CHA

PV

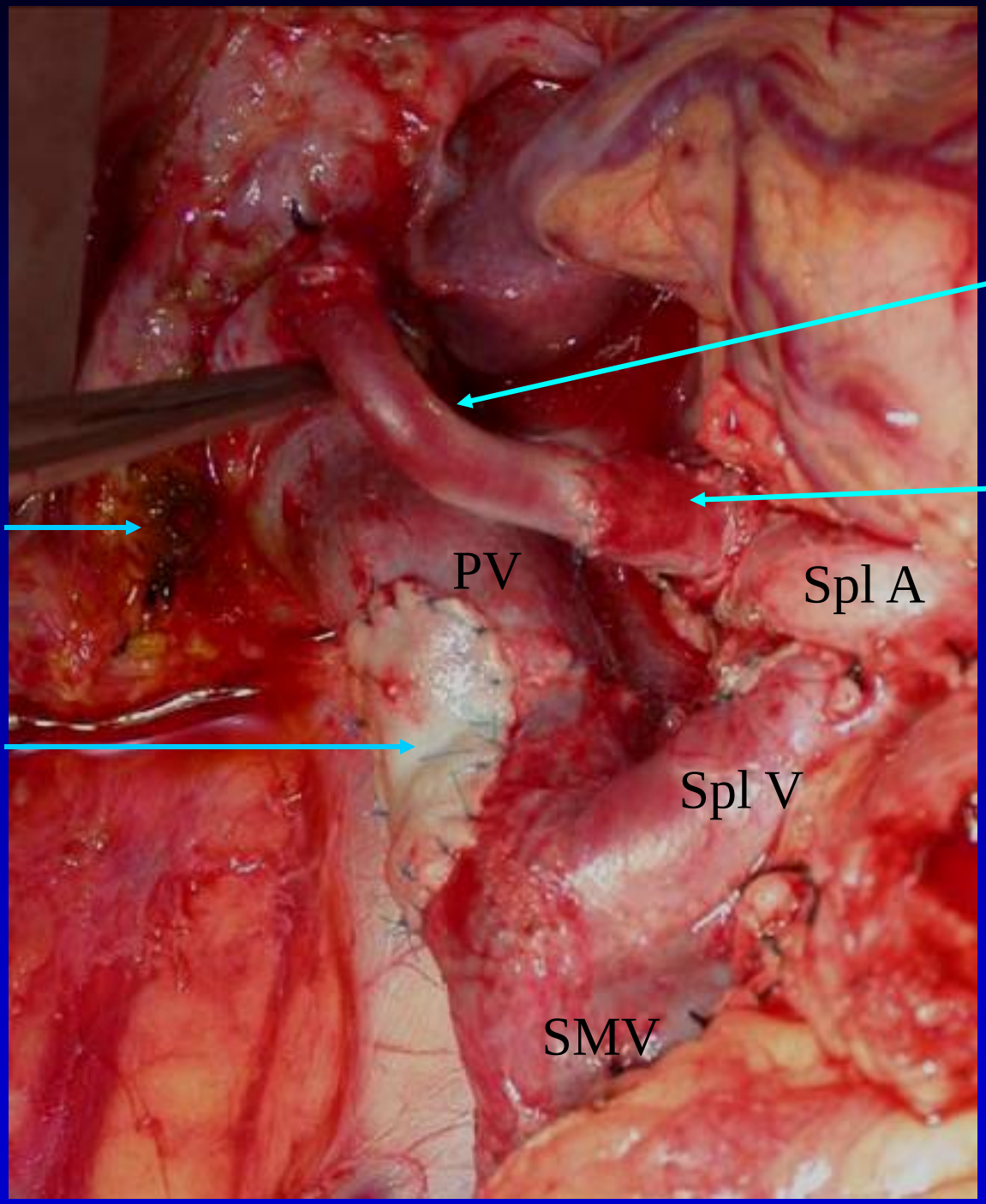
Spl A

Spl V

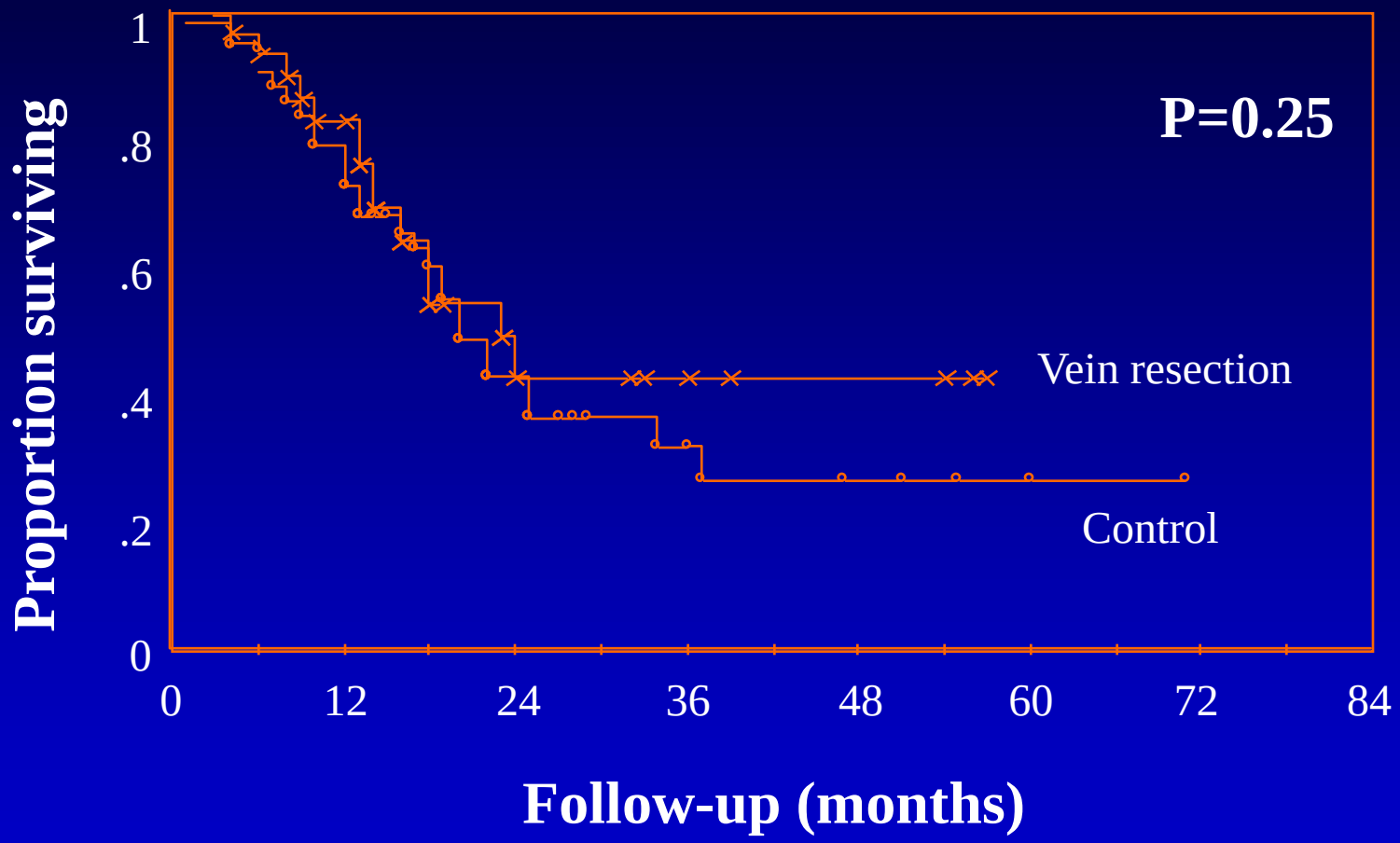
Tumor

SMV

492495


Rev saph
vein graft
CHA
divided
bile duct
PV
Spl A
saph vein
patch
Spl V
SMV

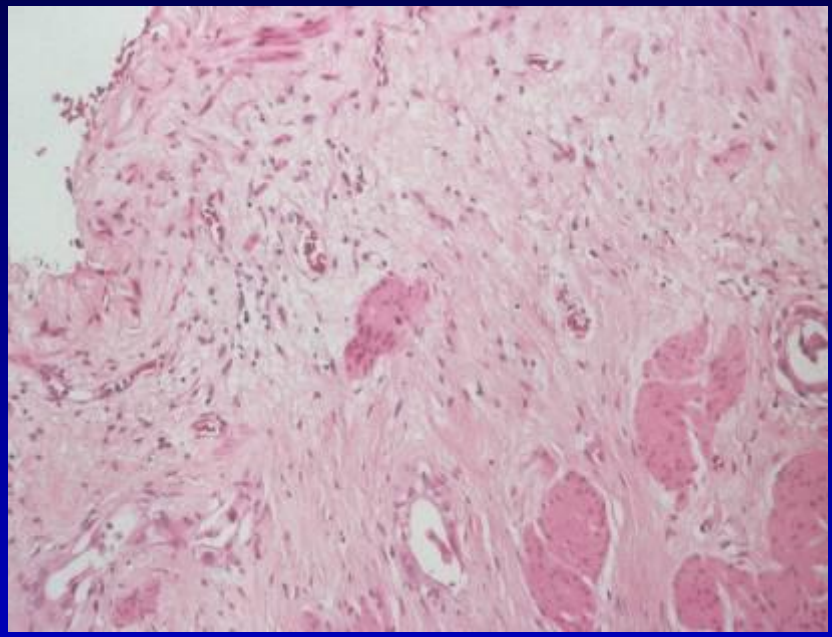
Venous Resection During Pancreaticoduodenectomy



Leach et al. Br J Surg 85:611-617, 1998

Pancreaticoduodenectomy and Vascular Resection

Venous Resection and Reconstruction



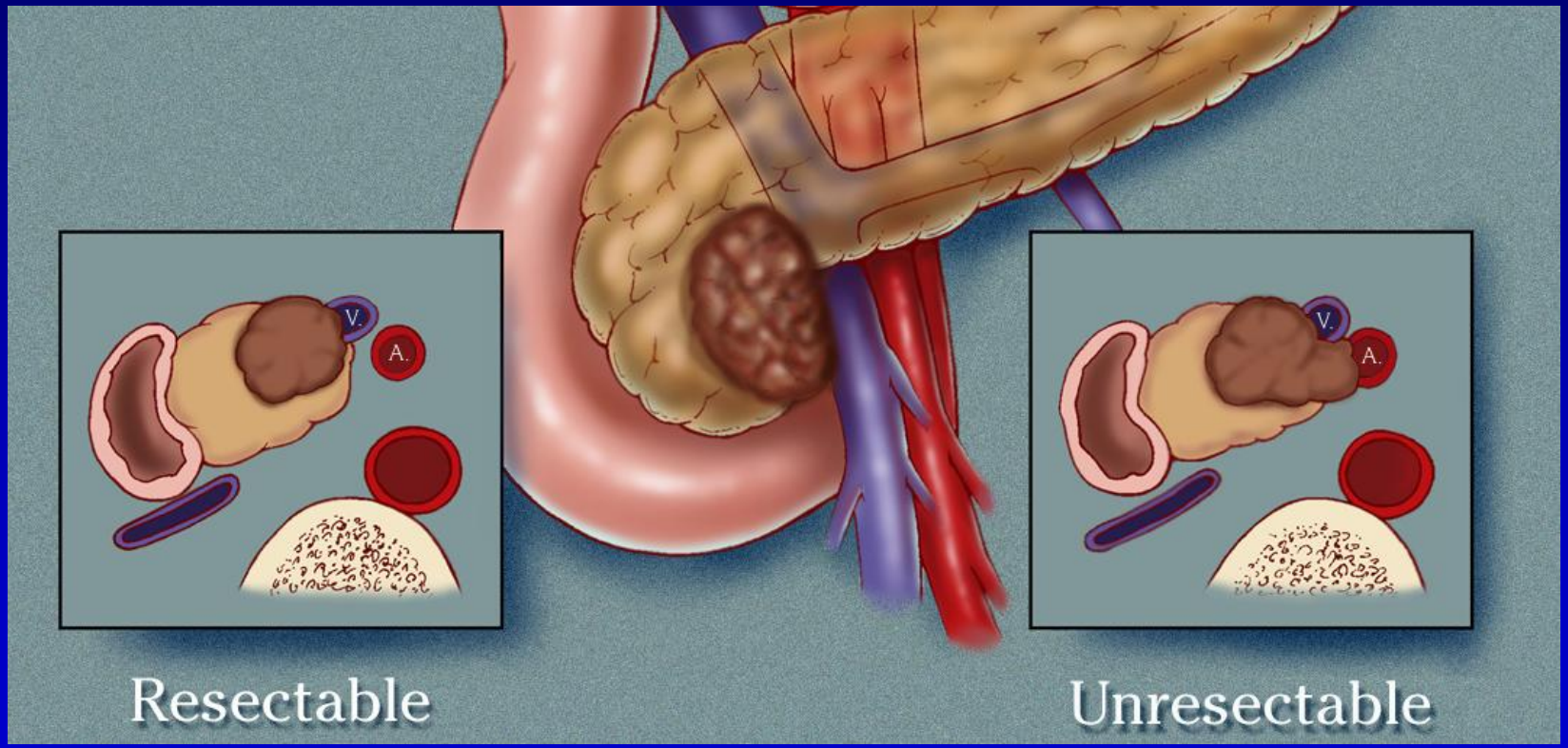
Predicted by CT: 84%

Histologically confirmed: 71%

Bold, et al. J Gastrointest Surg, 1999

Require vascular resection: 36% of all PD

Surgical Resection Following Radiation Therapy with Concurrent Chemotherapy in Patients with Previously Unresectable Adenocarcinoma of the Pancreas



53 woman
Painless jaundice, treated with neoadjuvant therapy
CA19-9 5,300 prior to Rx
Decreased to 2,500 after 4 months of systemic therapy

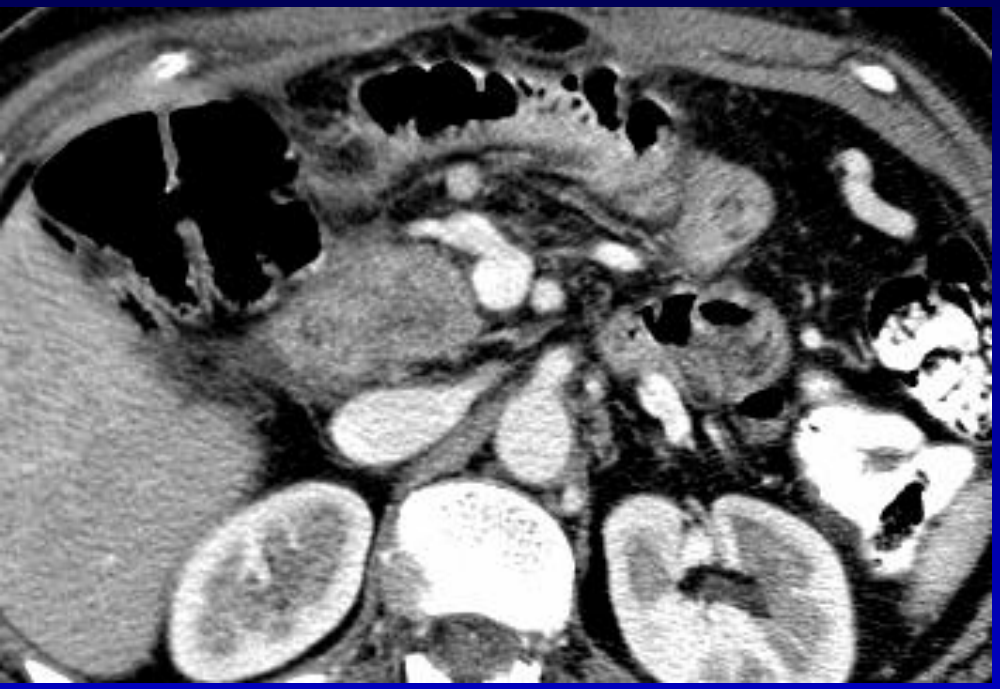
CA19-9
correlates with:

- stage of disease
- response to therapy
- survival duration

- ≥700 look for mets (Fox Chase)

10/02

2/03

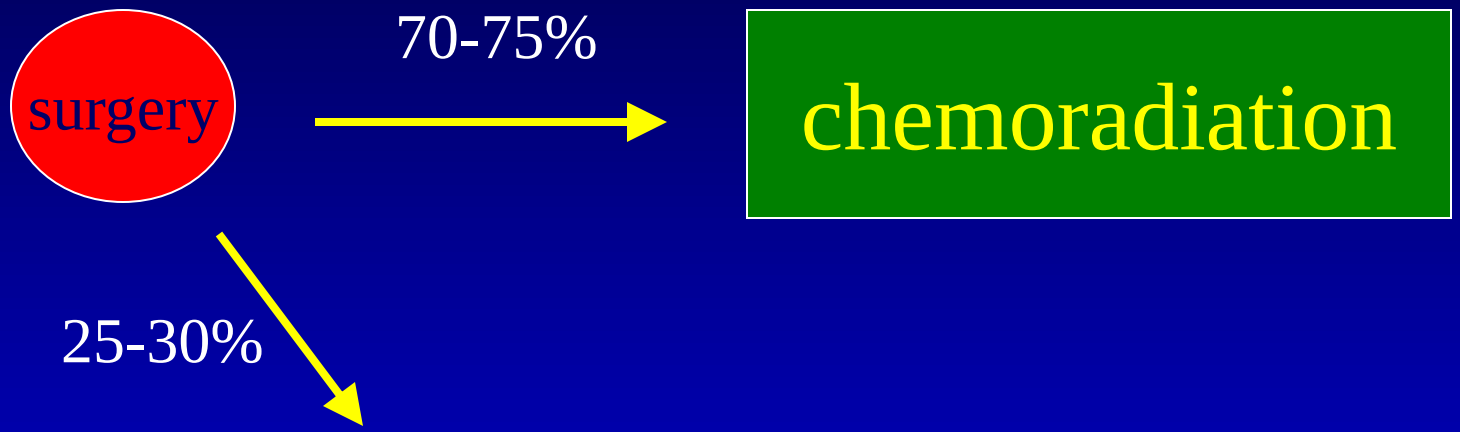


Pathology: T1N0 (R0), grade 3 Rx effect

Rationale for preop therapy

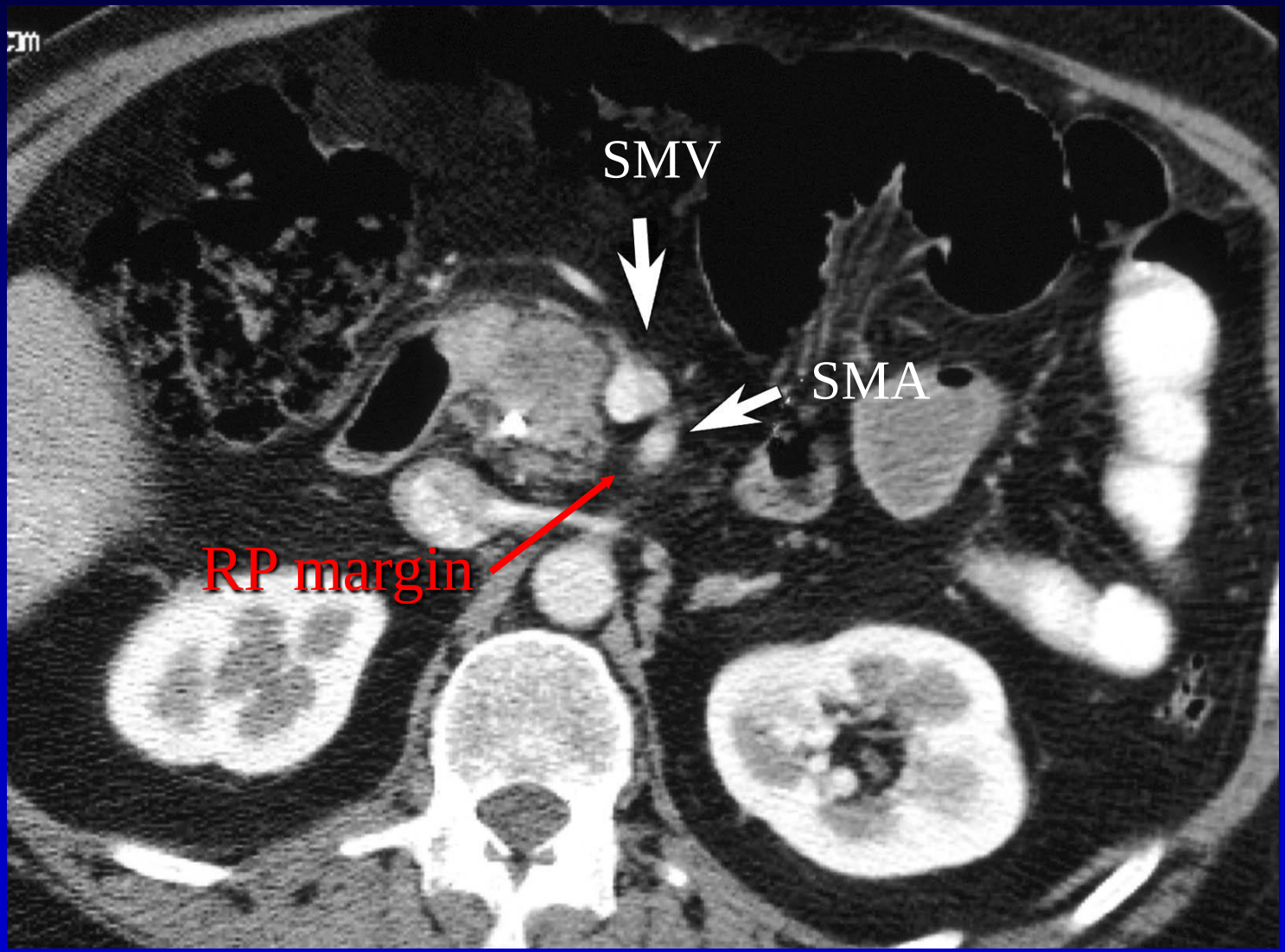
- Multimodality therapy superior to surgery alone
- A minimum of 25-30% of patients will not receive adjuvant therapy if planned postop
- A logical strategy for the high incidence of positive margins
- patients with rapidly progressive disease will not be subjected to surgery

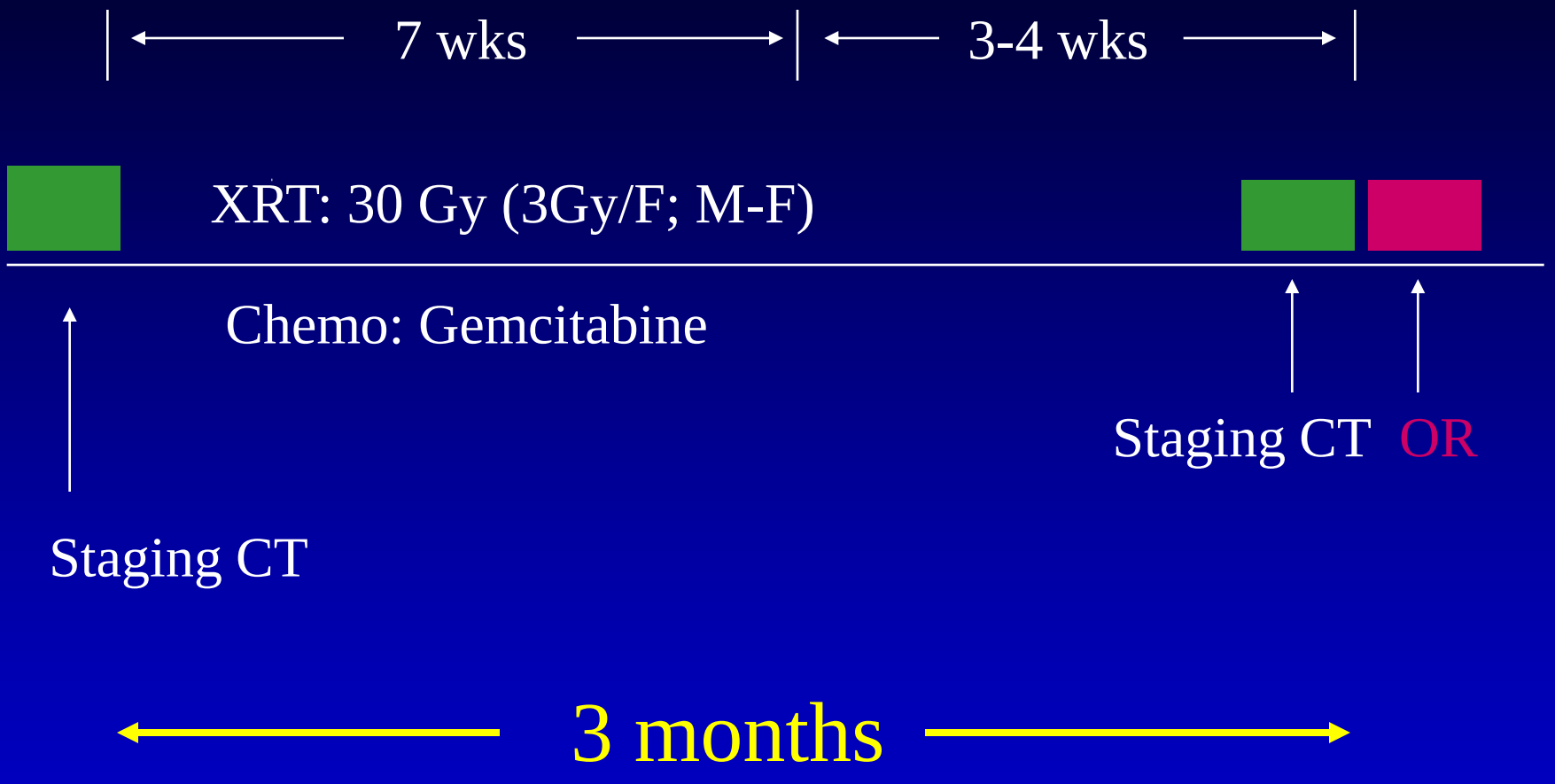
MDACC / JHU



- death
- complication
- poor performance status
- patient refusal

Retroperitoneal Margin




7 wks
3-4 wks
XRT: 30 Gy (3Gy/F; M-F)
Chemo: Gemcitabine
Staging CT
Staging CT
OR
3 months

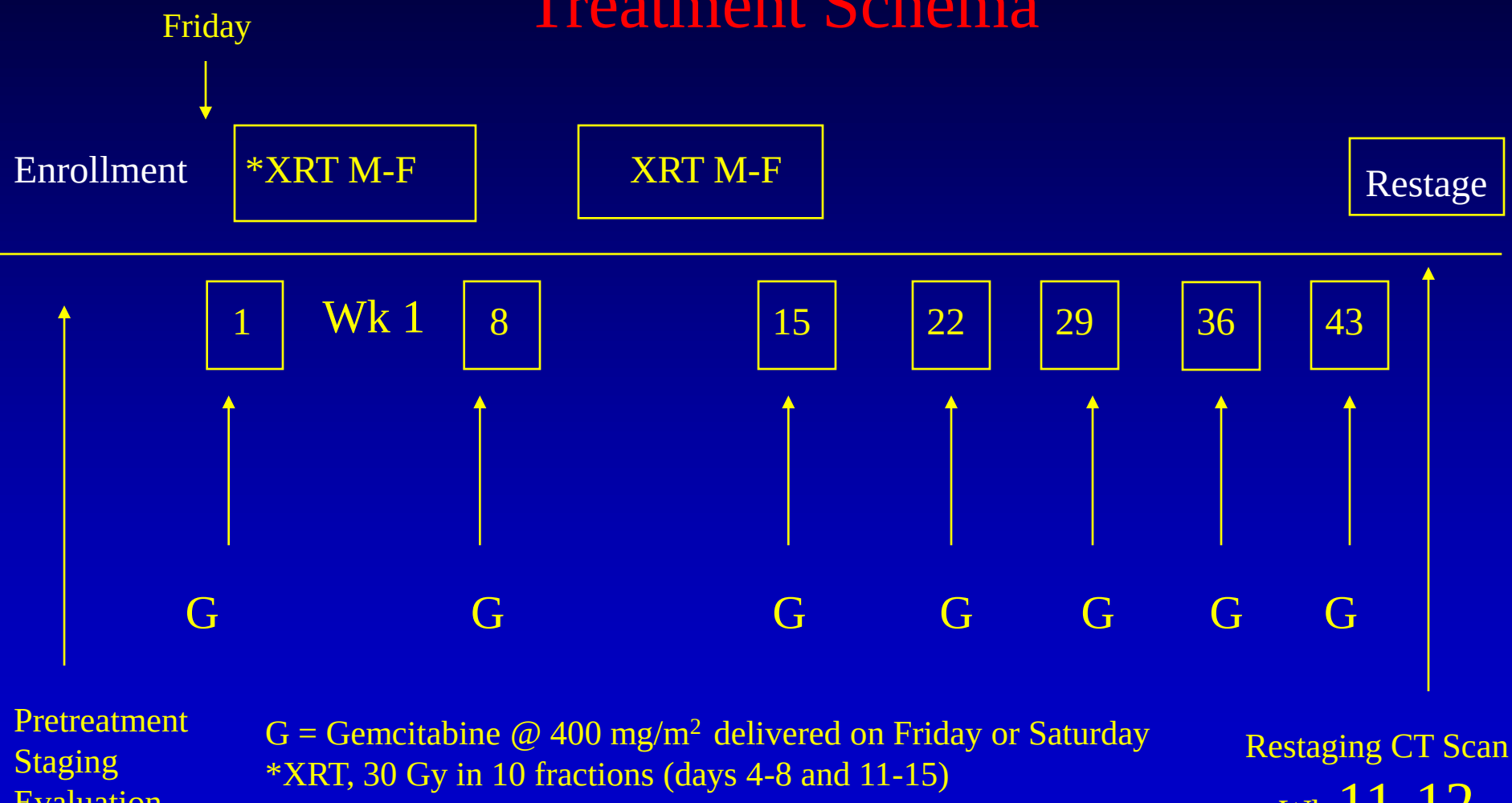
Potential Barriers to Neoadjuvant Therapy

- Need for biopsy

  EUS - FNA
- Biliary decompression

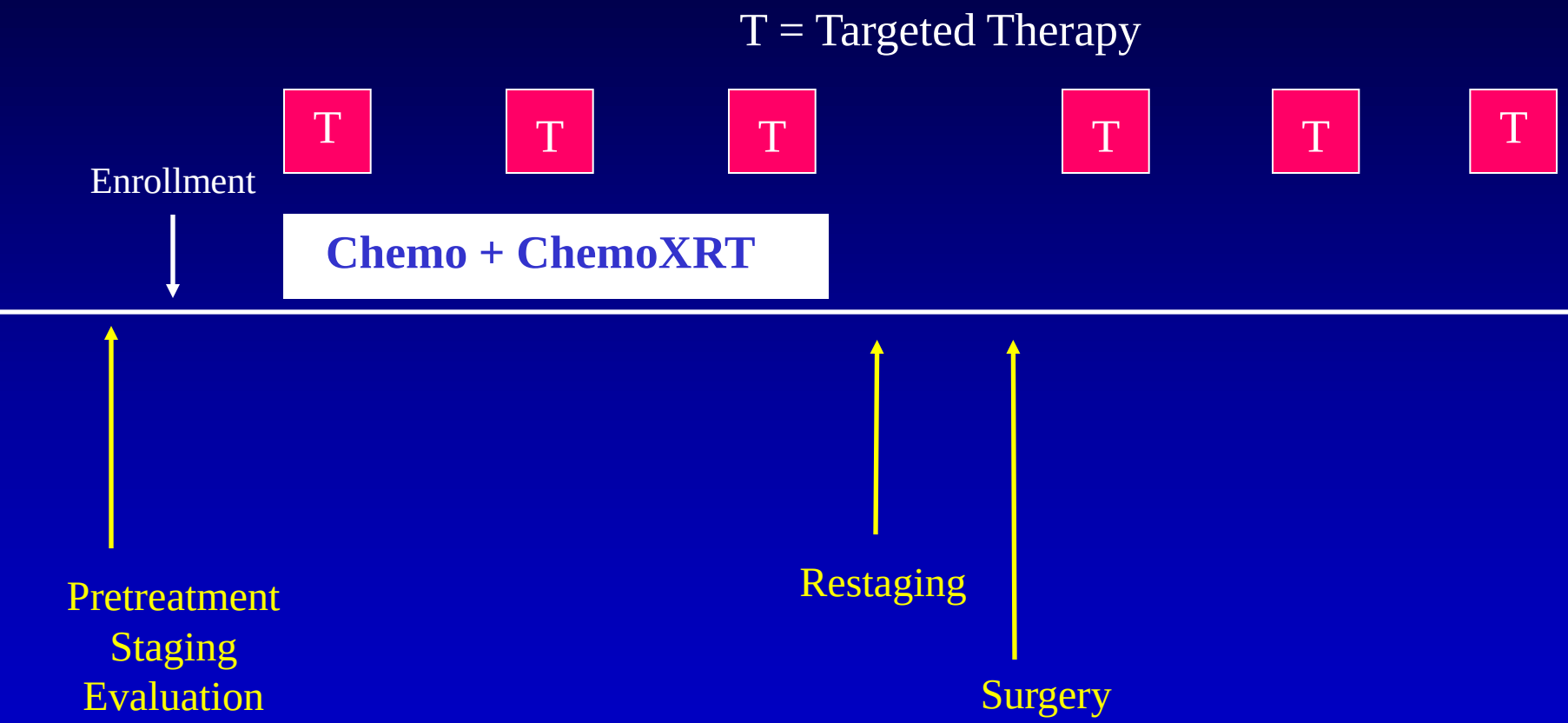
Phase II Trial of Preoperative Gemcitabine-Based Chemoradiation

Treatment Schema

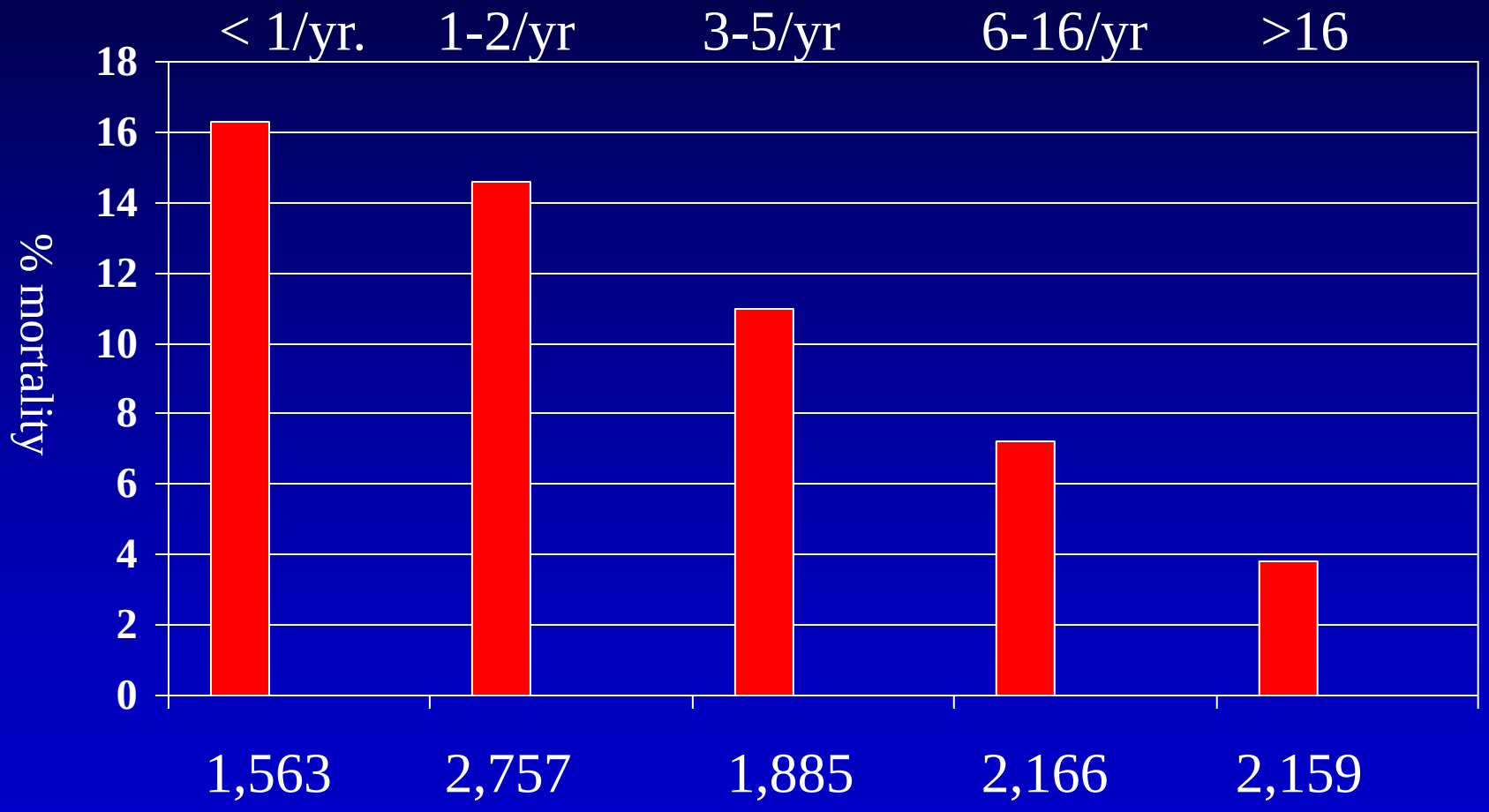


Future Preoperative Strategies

Generalized Treatment Schema



Pancreaticoduodenectomy mortality based on hospital volume (1994-1999)



Birkmeyer, NEJM 2002;346:1128