Pancreatic Cancer

What you need to know to be able to educate your patients and their families.

Overview

- Pancreatic cancer is ductal adenocarcinoma (85% of cancers)
  - Other exocrine subtypes
  - Lymphoma
  - Neuroendocrine/Islet Cell tumors
- Fourth leading cause of cancer-related death
- The only potential cure is surgery
  - Only about 20% of patients are candidates
  - Even with resection only about 20% alive at 5 years

Presenting Symptoms

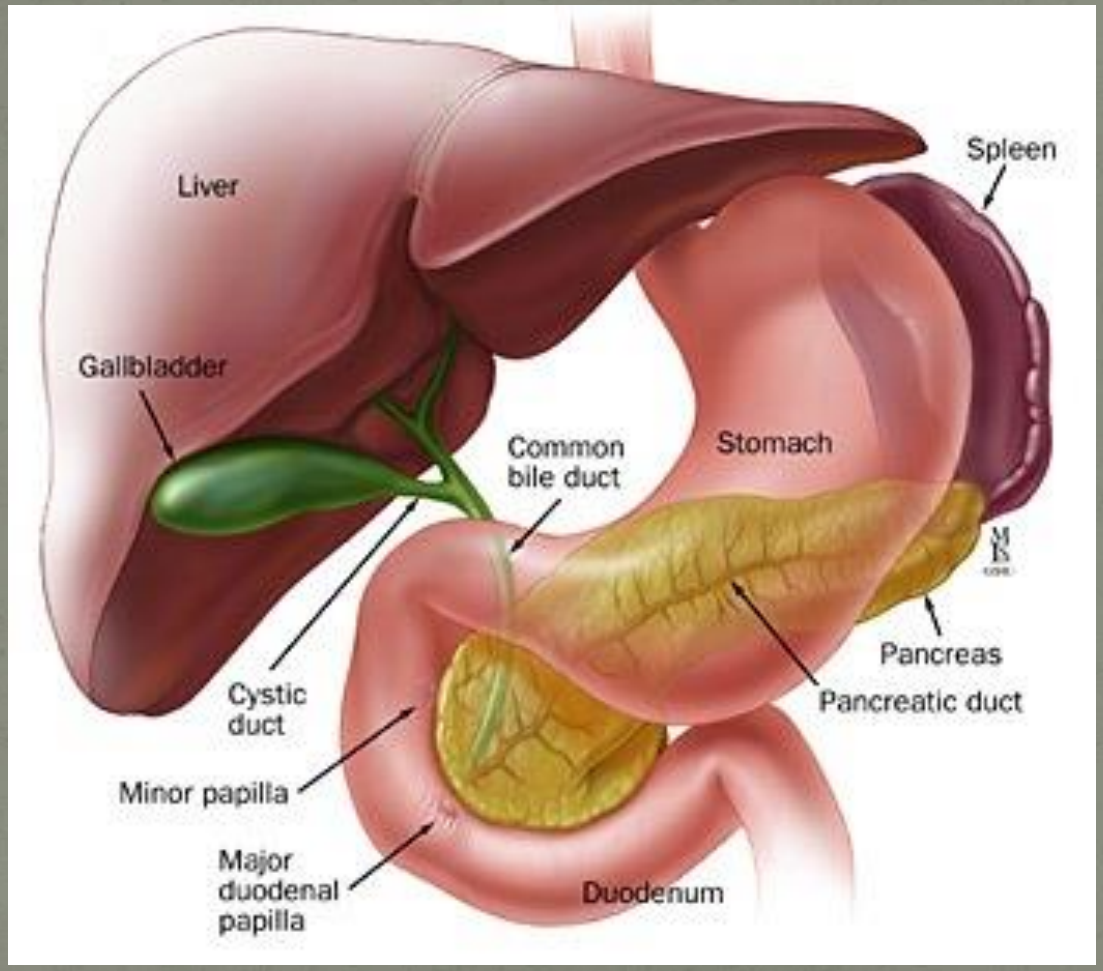
- Most common signs:
  - Abdominal Pain
  - Jaundice – also painless
  - Weight Loss

- Others:
  - Weakness
  - Dark urine
  - Nausea
  - Back pain
  - Diarrhea/Steatorrhea

Clinical Signs

- Jaundice
- Hepatomegaly/RUQ mass
- Cachexia
- Epigastric mass
- Ascites
- Courvoisier's sign

- Depends on tumor location
  - Head 60-70%
  - Body/Tail 20-25%
  - Uncinate Process 5-10%


Liver
Spleen
Gallbladder
Common bile duct
Stomach
Pancreas
Pancreatic duct
Cystic duct
Minor papilla
Major duodenal papilla
Duodenum

Abdominal Pain

- Even with small tumors
- Not acute but insidious in onset (unless pancreatitis)
- Epigastric with radiation to sides or back
- May be intermittent
- Worse with:
  - Eating
  - Lying supine
  - At night
- Better with curling up

Jaundice

- Obstructive due to bile duct obstruction
- Painful vs Painless
  - Painless better prognosis generally
  - Painful usually related to large tumor or mets

Signs of metastasis

- Liver, Peritoneum, Lungs, Bone

- Abdominal Mass
- Ascites
- Left supraclavicular node (Virchow's)
- Periumbilical mass/node (Sister Mary Joseph's)

Evaluation of patients with abdominal pain and/or jaundice

- All of the symptoms/signs are nonspecific so must have labs and imaging.

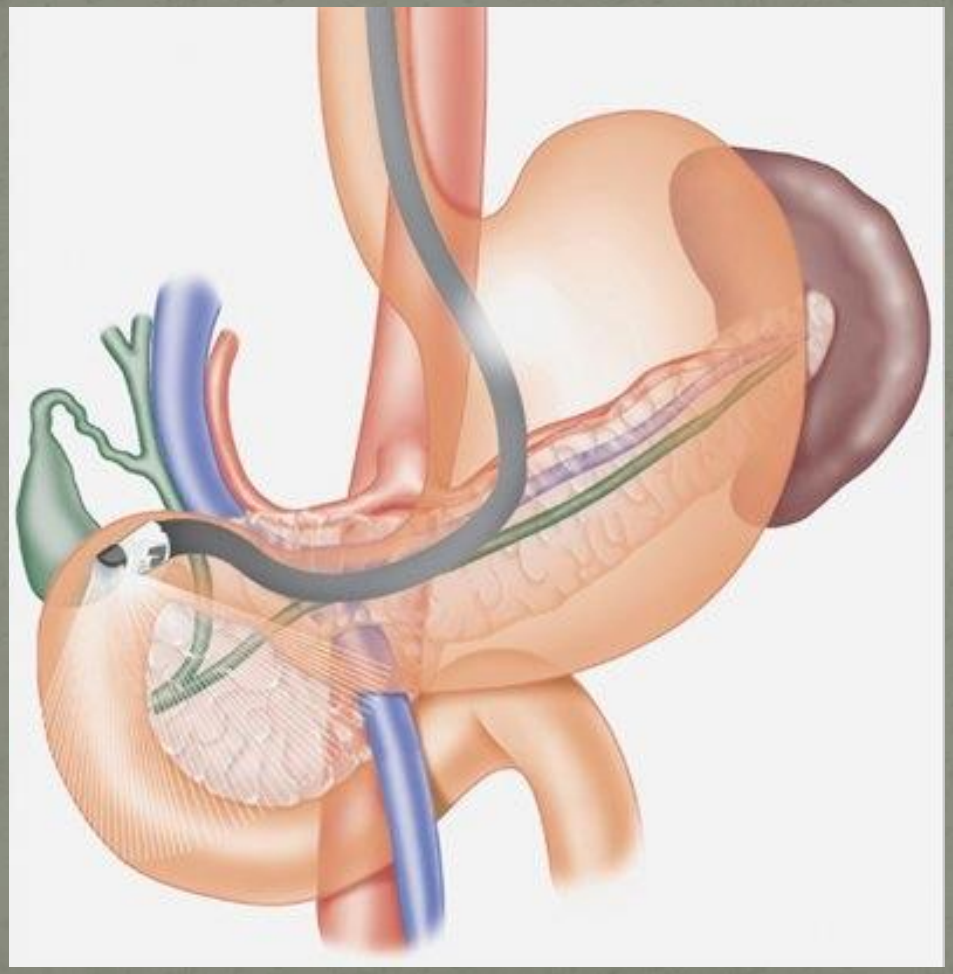
- Labs:
  - Liver enzymes
  - Alk Phos
  - Bili
  - Lipase

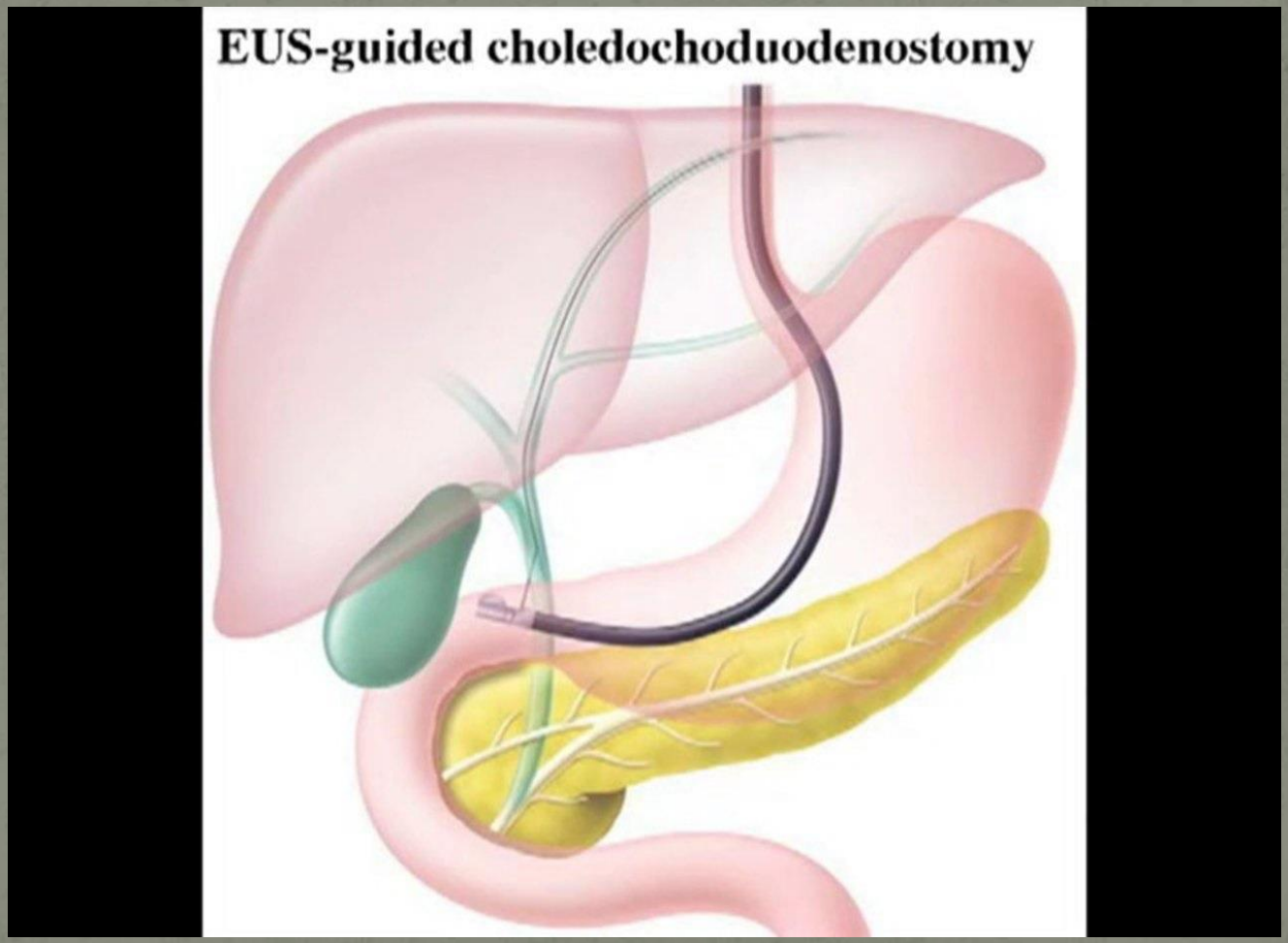
Evaluation of patients with abdominal pain and/or jaundice

- Imaging:
  - Jaundice : Ultrasound
    - Bile duct dilation
    - Stones
    - Pancreatic mass >3cm
  - Epigastric pain: CT with IV contrast ideally
    - Better visualization of pancreas
    - Staging information

What if these studies suggest malignancy?

- ERCP if bile duct obstruction
  - This is mostly to prevent cholangitis
  - Tissue sampling also an option
- MRCP if patient can't undergo procedure
- Endoscopic Ultrasound (EUS)
  - Tissue Diagnosis
  - Staging
  - Palliative stenting




EUS-guided choledochoduodenostomy

Staging

- Determines resectability likelihood
- Imaging determines the stage in most cases
  - This can be altered post-operatively
- TNM system
- Resectable vs Borderline Resectable

Resectability

- Non-resectable if:
  - Metastasis
  - Significant lymph node disease
  - Direct involvement of:
    - Superior Mesenteric Artery
    - Aorta
    - Inferior Vena Cava
    - Celiac axis
    - Hepatic Artery
- Borderline resectable:
  - Minor “versions” of the above
  - Superior Mesenteric Vein involvement
  - Surgical expertise will play a role

TABLE 1: TNM staging of pancreatic tumors

Primary tumor (T)

TX	Primary tumor cannot be assessed
T0	No evidence of a primary tumor
Tis	Carcinoma in situ[a]
T1	Tumor limited to the pancreas, ≤ 2 cm in diameter
T2	Tumor limited to the pancreas, > 2 cm in diameter
T3	Tumor extends beyond the pancreas but without involvement of the celiac axis or the superior mesenteric artery
T4	Tumor involves the celiac axis or the superior mesenteric artery (unresectable primary tumor)

Regional lymph nodes (N)

NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node(s) metastasis
N1	Regional lymph node(s) metastasis

Distant metastasis (M)

M0	No distant metastasis (no pathologic M0; use clinical M to complete stage group)
M1	Distant metastasis

Stage grouping

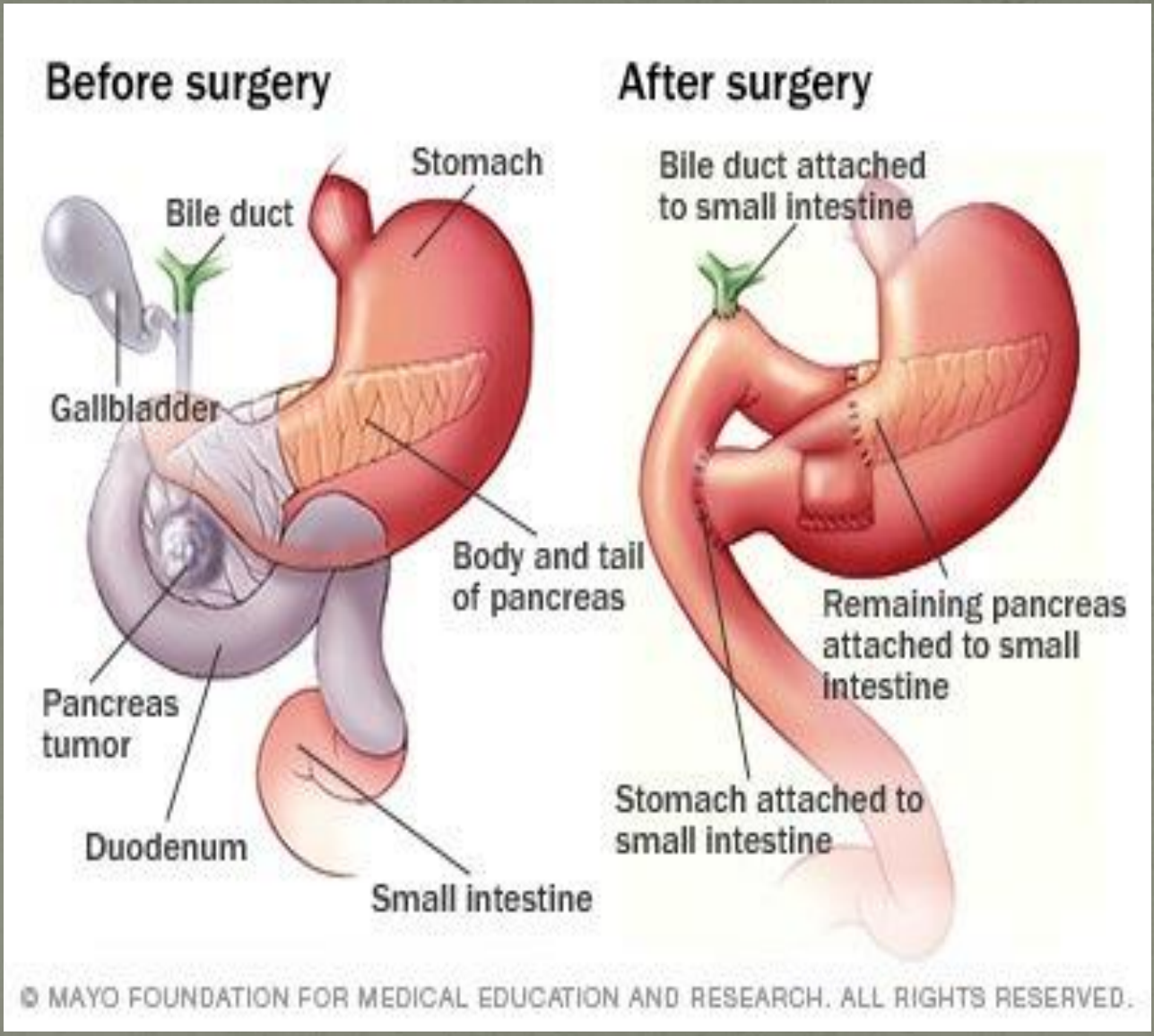
Stage 0	Tis	N0	M0
Stage IA	T1	N0	M0
Stage IB	T2	N0	M0
Stage IIA	T3	N0	M0
Stage IIB	T1–3	N1	M0
Stage III	T4	Any N	M0
Stage IV	Any T	Any N	M1

[a] This also includes the "PanINIII" classification

From Edge SP, Byrd DR, Compton CC, et al (eds): AJCC Cancer Staging Manual, 7th ed. New York, Springer, 2010.

Surgical resection

- Only 15-20% of patients are candidates for resection
- Head/Uncinate process
  - Pancreaticoduodenectomy (Whipple)
    - Conventional vs Pylorus-preserving


Before surgery
Stomach
Bile duct
Gallbladder
Body and tail of pancreas
Pancreas tumor
Duodenum
Small intestine
After surgery
Bile duct attached to small intestine
Remaining pancreas attached to small intestine
Stomach attached to small intestine
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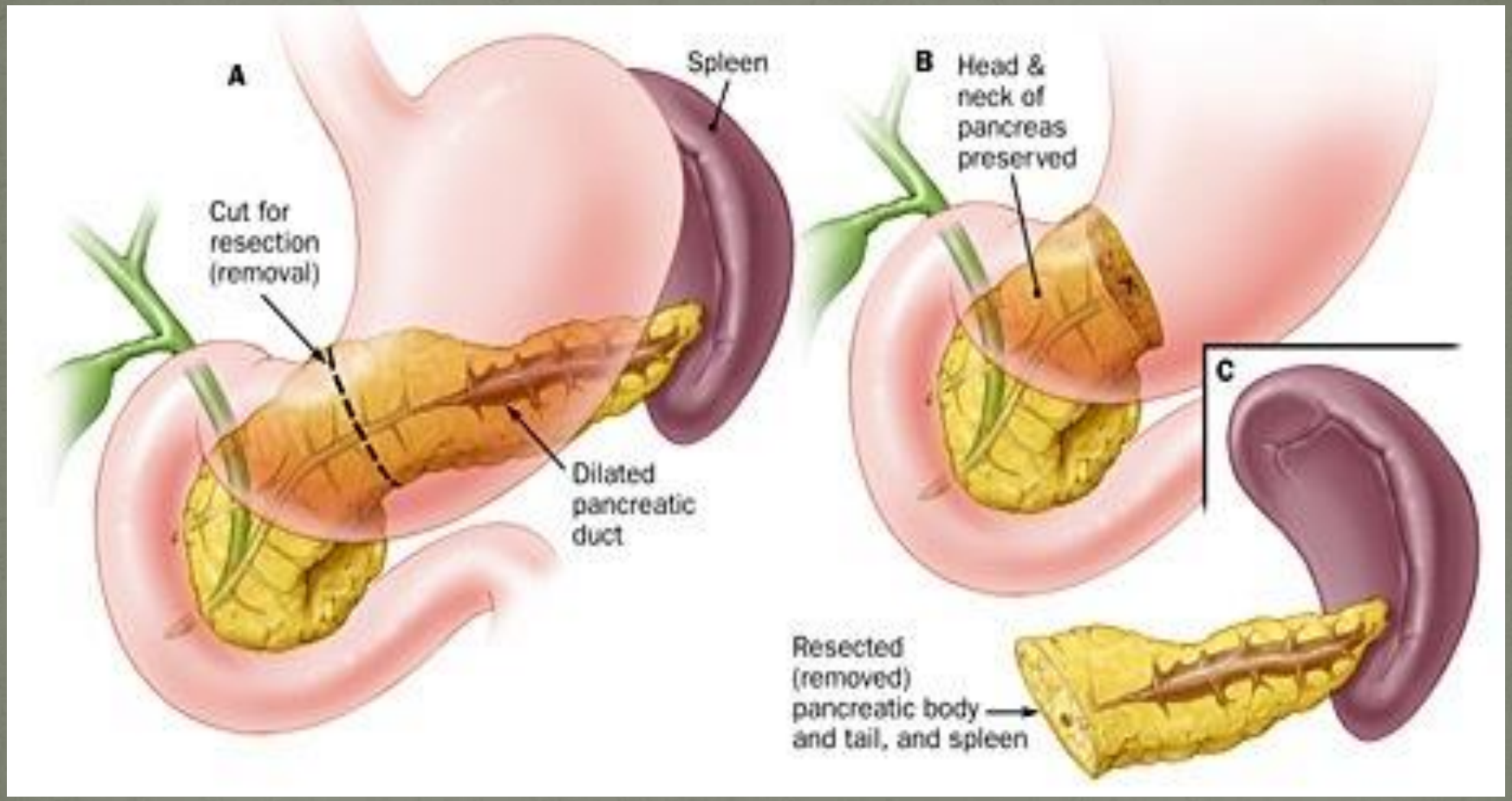
- Body
  - Distal Pancreatectomy and Splenectomy


A
Spleen
Cut for resection (removal)
Dilated pancreatic duct
B
Head & neck of pancreas preserved
C
Resected (removed) pancreatic body and tail, and spleen

Surgical resection

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- Head/Uncinate process
  - Pancreaticoduodenectomy (Whipple)
    - Conventional vs Pylorus-preserving
- Body
  - Distal Pancreatectomy and Splenectomy
- Total pancreatectomy +/- Islet Cell Transplantation

Prognosis

- Even with resection most die of their disease
- Nodal status after resection (positive or negative) is the single most important factor:
  - Node-positive (even 1) – 10% @ 5 years
  - Node-negative – 25-30% @ 5 years

Table 1. Staging System for Pancreatic Cancer

Stage	Characteristics	Median Survival (Months)
IA	Tumor < 2 cm and limited to pancreas No lymph node involvement	24.1
IB	Tumor > 2 cm and limited to pancreas No lymph node involvement	20.6
IIA	Tumor extends beyond the pancreas (no superior mesenteric artery or celiac axis involvement) No lymph node involvement	15.4
IIB	Any size tumor with regional lymph node involvement	12.7
III	Tumor involves the superior mesenteric artery or celiac axis ± lymph node involvement No distance metastasis	10.6
IV	Any size tumor ± lymph node involvement Distance metastasis	4.5

Source: References 5, 11-13.

Prognosis

- Even with resection most die of their disease
- Nodal status after resection (positive or negative) is the single most important factor:
  - Node-positive (even 1) – 10% @ 5 years
  - Node-negative – 25-30% @ 5 years
- "Conditional Survival": If you make it to year 3 then you are much more likely to make it to year 5 than the overall numbers suggest.

Why are these numbers so bad?

- Systemic recurrence (>80% of patients)
  - Micrometastasis
- Local recurrence (>20% of patients)
  - Inadequate resection

Chemotherapy/Radiation

- Who should get this?
  - Adjuvant
    - All patients with resected pancreatic cancer should receive chemotherapy
    - Typical course is 6 months
    - Most American oncologists recommend radiation as well
    - Most Non-American oncologists do not
  - Neo-adjuvant
    - Unresectable, with hopes of down-staging
    - Borderline resectable, with hopes of down-staging

The sad truth

- Even with all the advances in medicine, survival rates are still very low
- Most progress has been made in palliative approaches
- The goal is the development of an early detection method as it usually too late.