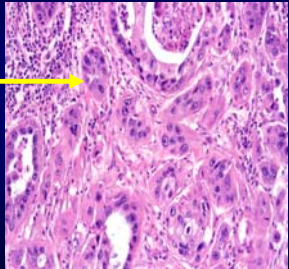


Surgical Pathology and Clinical Implications: Pathologist's Perspective
 WENDY L. FRANKEL
 ASSOCIATE PROFESSOR OF PATHOLOGY
 Ohio State University

- Intra-operative analysis
- Gross assessment
- Microscopic evaluation
 - Adenocarcinoma
 - Mucinous tumors
- Stage
- Does it matter?

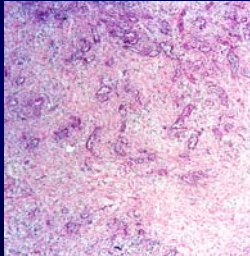
Intra-Operative Analysis

- Malignant vs. benign
 - Ductal adenocarcinoma
 - Chronic pancreatitis
- Straight forward on large well fixed section
- Frozen – small and artifact



Pancreas Frozen Sections

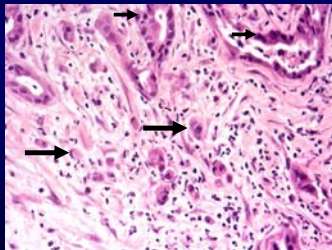
- Criteria for cancer
- Some identified in all cancer and no benign cases
 - Disorganized duct distribution



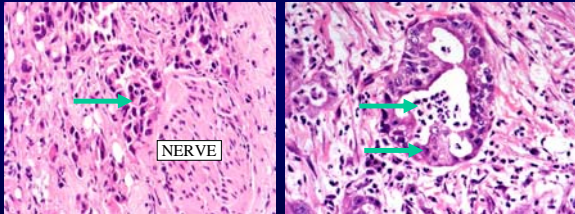
Hyland, Am J Surg Pathol, 1981

FS- Criteria

- Nuclear size variation $\geq 4:1$
- Incomplete ductal lumen
 - Nests
 - Single file
 - Gaps
 - Cribriforming



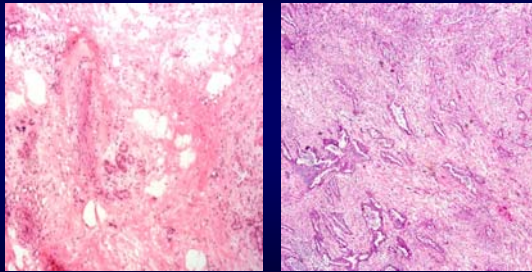
FS- Criteria
 Helpful when present, but less common



NERVE

Perineural invasion Mitoses, necrotic debris, nucleoli

Low Power- Disorganized Ducts and Stroma



Chronic pancreatitis Adenocarcinoma

Higher Power- Nuclear Variation, Nucleoli and Necrosis

Chronic pancreatitis Adenocarcinoma

FS - Approach

- The difficult case
 - Stroma and duct organization
 - Cytology
 - Mitosis, necrosis, perineural invasion not found in many
- Request more tissue
- Atypical and defer

FS - Approach

DIAGNOSIS - ADENOCARCINOMA

FS – Tumor Type

- Tumor type may alter surgical procedure
- Adenocarcinoma
- Clues: sheets, organoid
- Lymphoma- stop
- NET- more

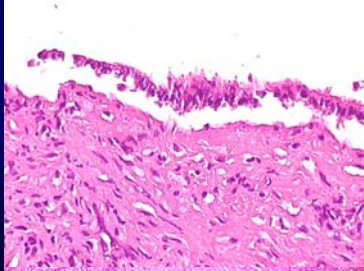
Pitfalls Chronic Pancreatitis

Intra-Operative Assessment Cysts

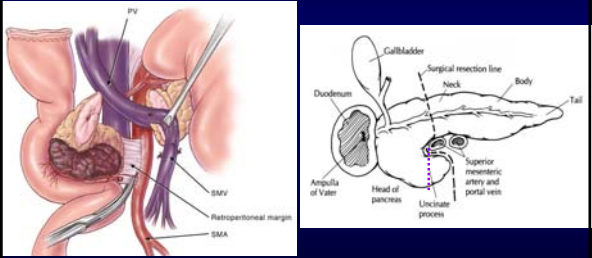
- Resect or drain?
- Pseudocyst
- Mucinous tumor
- Cystic adenocarcinoma

Cysts

- ? Epithelium
- R/O mucinous tumor
- Do not drain
- Resect and sample well

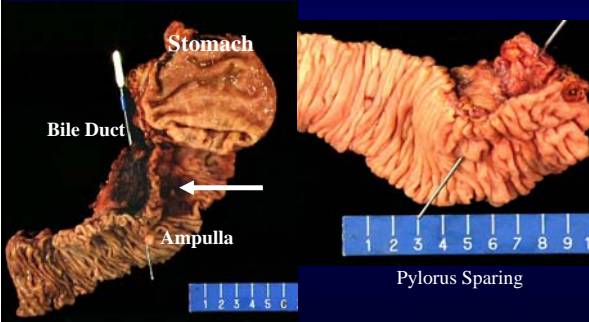


Gross Pathologic Assessment

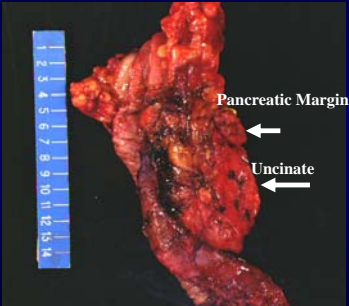


Westra, 2003

Whipple Orientation Gut, BD, Ampulla, Pancreas




Uncinate/retroperitoneal



Picture with ink

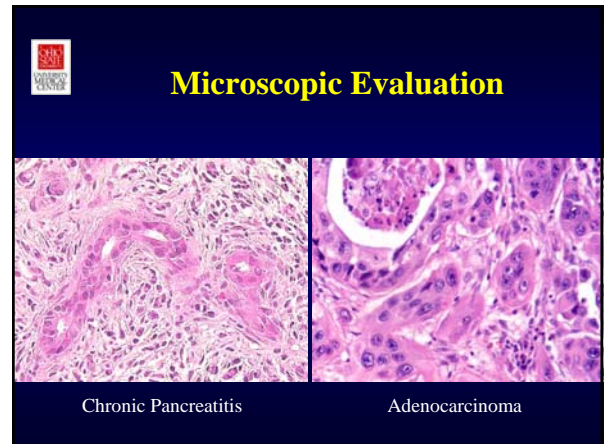
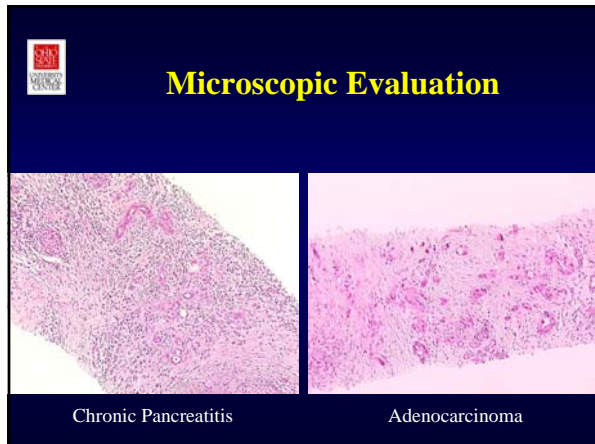
Pathologic Assessment

- Margins- Gut, BD, pancreas, uncinata
- Open bile duct ? ink
- Bread loaf pancreas perpendicular long axis duodenum
- Relationship tumor to other structures



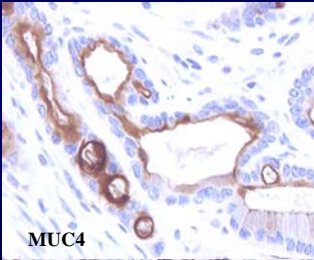
Microscopic Evaluation

- Malignant or benign? Adeno vs. CP
 - Low power
 - Lobular architecture
 - Duct contours
 - High power
 - Cytology- nuclear variation
 - Mitosis



Immunohistochemical Stains Any Help?

- P53
- Smad4/DPC4 (loss in some cancer) Tascilar, Am J Clin Pathol, 2001.
- Maspin Oh, Appl Immunohisto, 2002.
- MUC 4 Ringel, Mol Cancer, 2003.

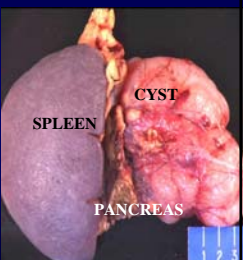


MUC4

MASPIN

PANCREAS CYSTIC TUMORS


- Nonneoplastic cysts common
- < 10% tumors but low grade
- Neoplastic cysts
 - Serous cystadenoma
 - **Mucinous cystic neoplasm**
- Cystically dilated ducts
 - **Intraductal papillary mucinous**
- Cyst - degenerative change any tumor



Non-Neoplastic Cyst Pancreatic Pseudocyst

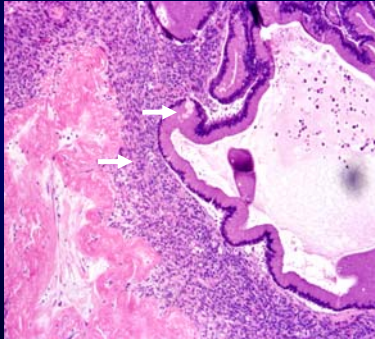
Mucinous Cystic Neoplasm (MCN)

- Women
- Body/tail
- No continuity duct
- Prognosis excellent without invasion

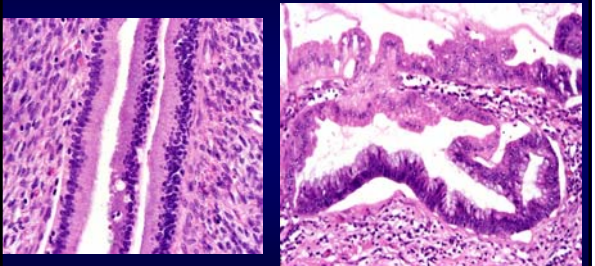


Mucinous Cystic Neoplasm

- Mucinous epithelium
- Ovarian type stroma
- Classification by dysplasia
 - Adenoma
 - Borderline
 - Carcinoma



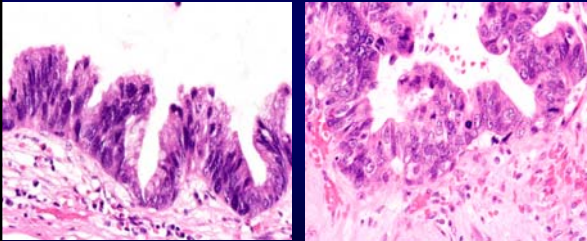
Mucinous Cystic Neoplasm



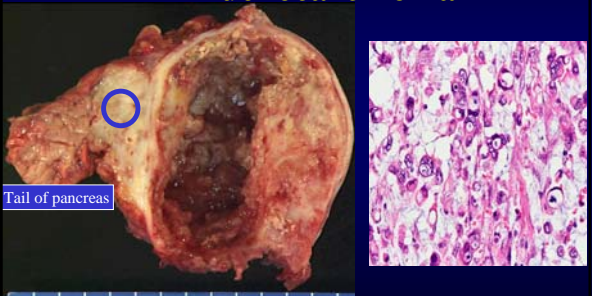
Mucinous cystadenoma

Mucinous Cystic Neoplasm with Moderate Dysplasia, Borderline (Uncertain Malignant Potential)

Mucinous Cystic Carcinoma (Noninvasive)



MCN with Invasive Adenocarcinoma

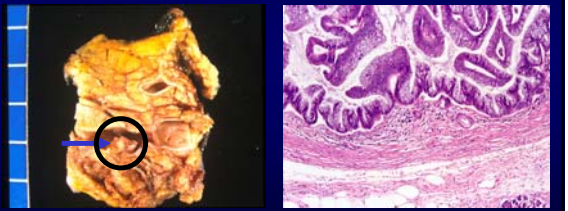


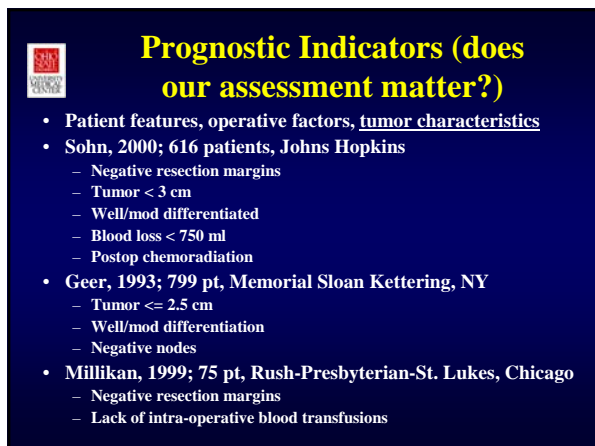
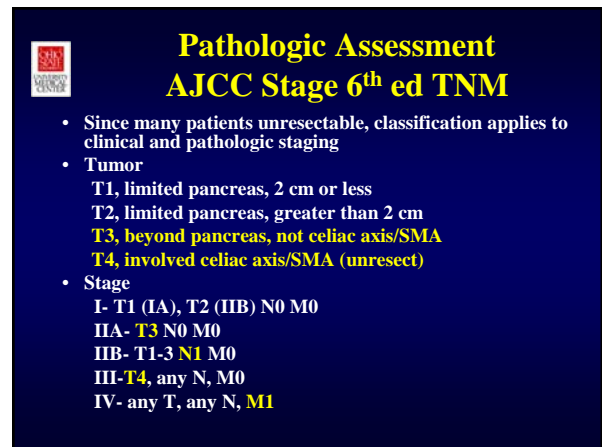
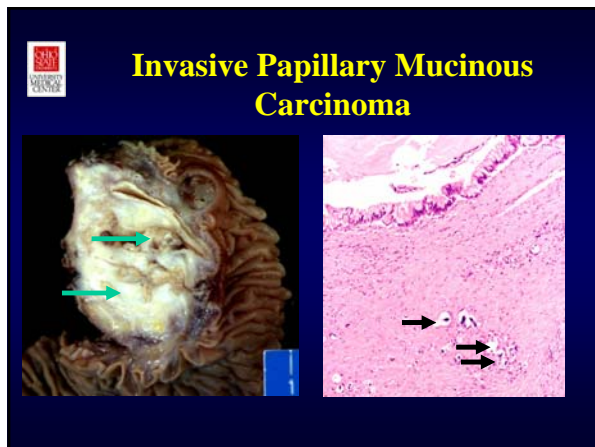
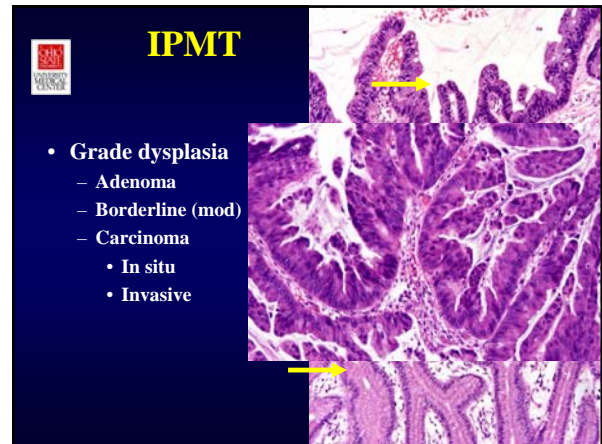
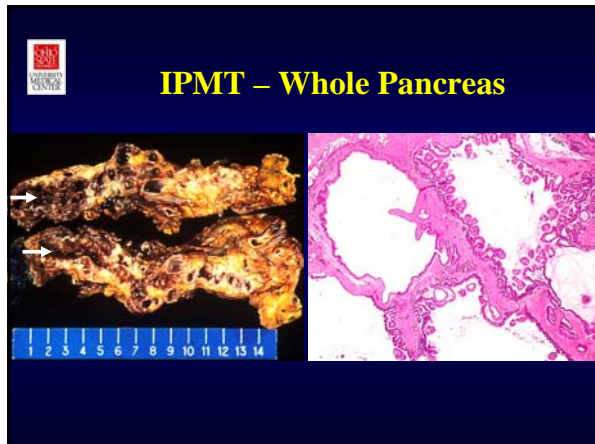
Tail of pancreas

Dilated Ducts Intraductal Papillary Mucinous Tumors

- 6th to 7th decade, men and women
- Head > tail
- Involvement main duct or diffuse
- Continuity with duct system
- Mucin seen at ERCP
- 5 year survival nearly 100% if noninvasive and margin negative

Intraductal Papillary Mucinous Tumor (IPMT)







DDW 2006
Rodger C. Haggitt GIPS

**Barrett's and Inflammatory Bowel
Disease**

Clinical Pathologic Interaction
Pathology/Gastroenterology team,
Harvard and Mayo