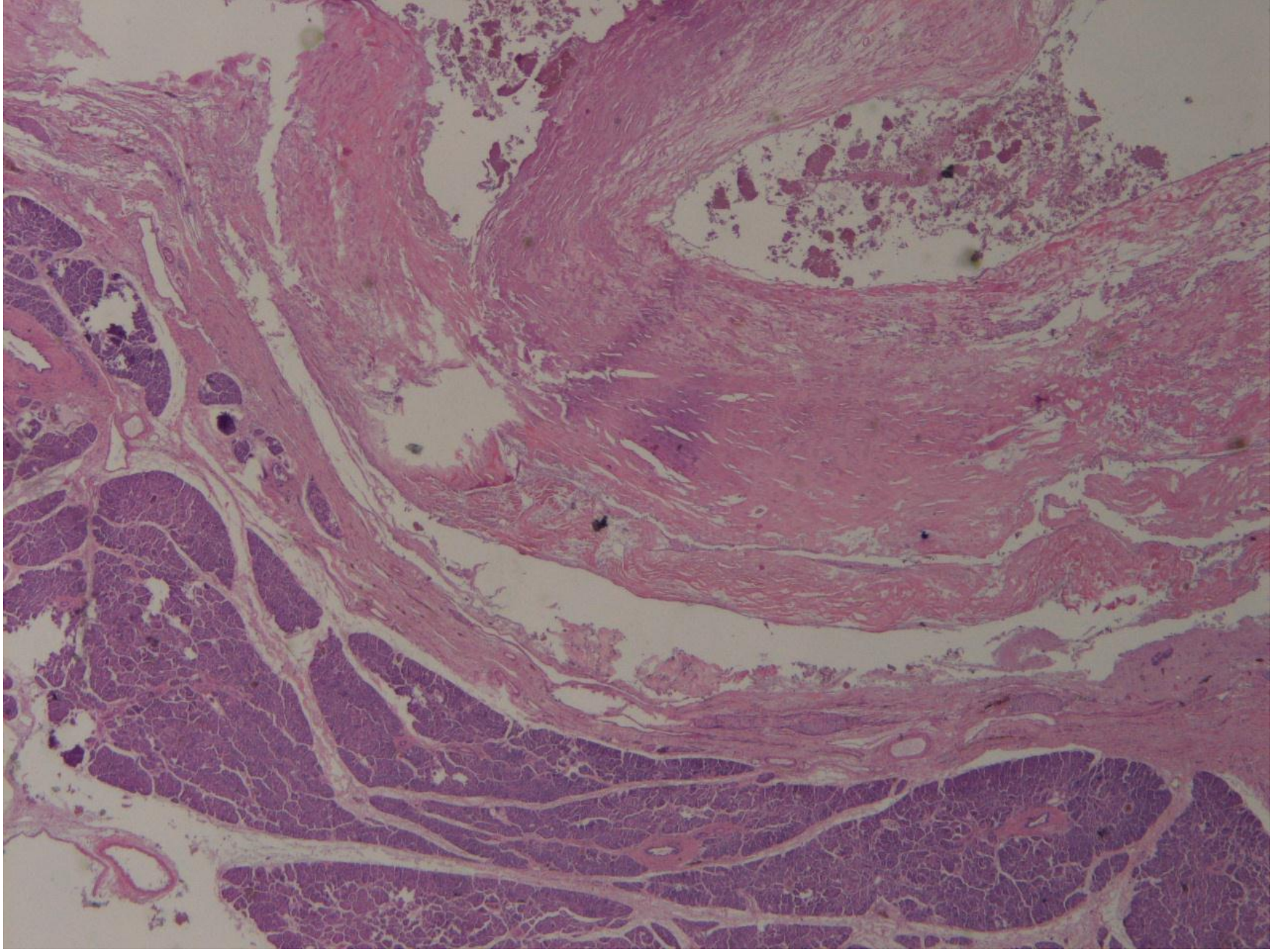
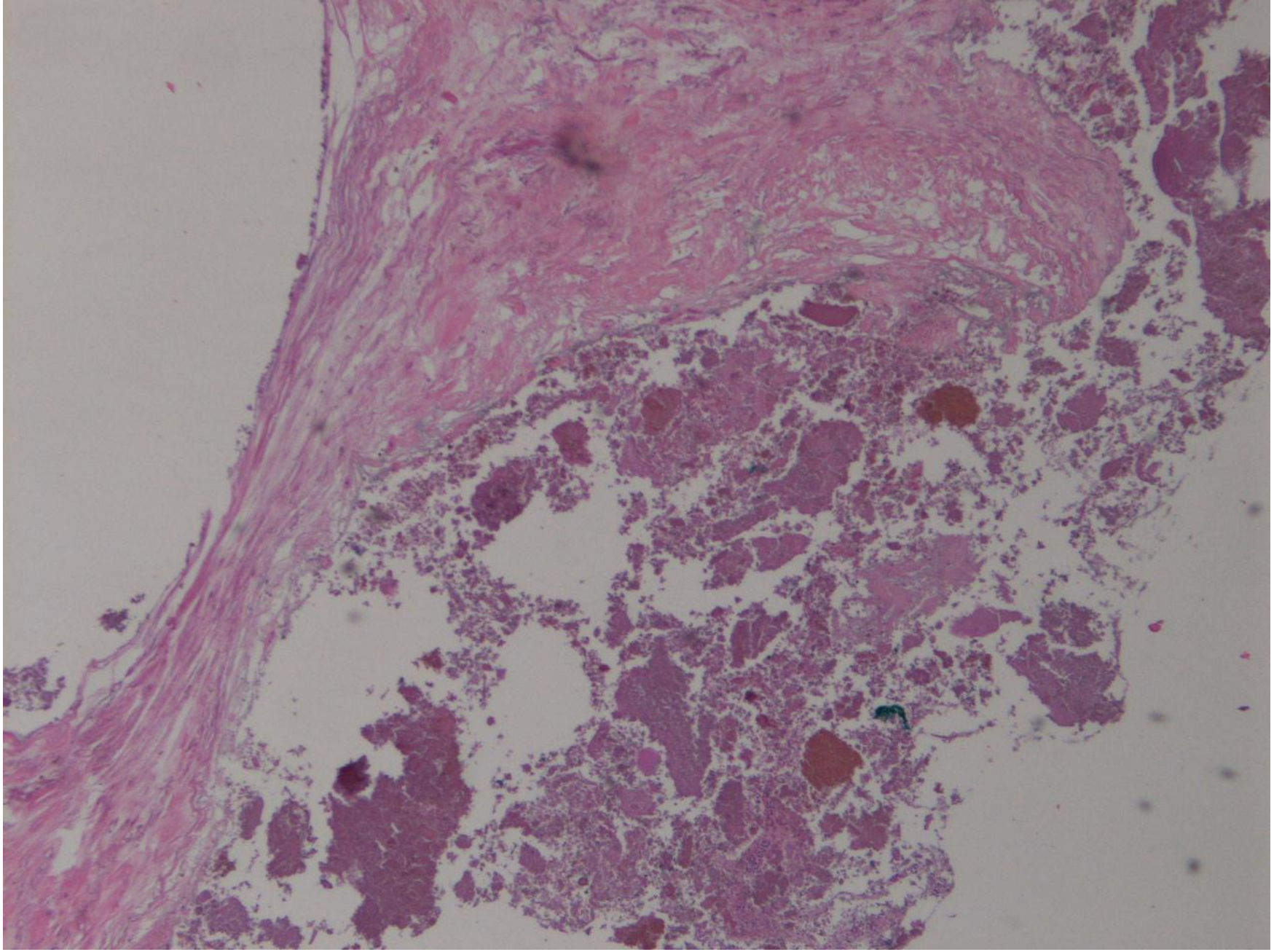
Surgical Pathological Conference

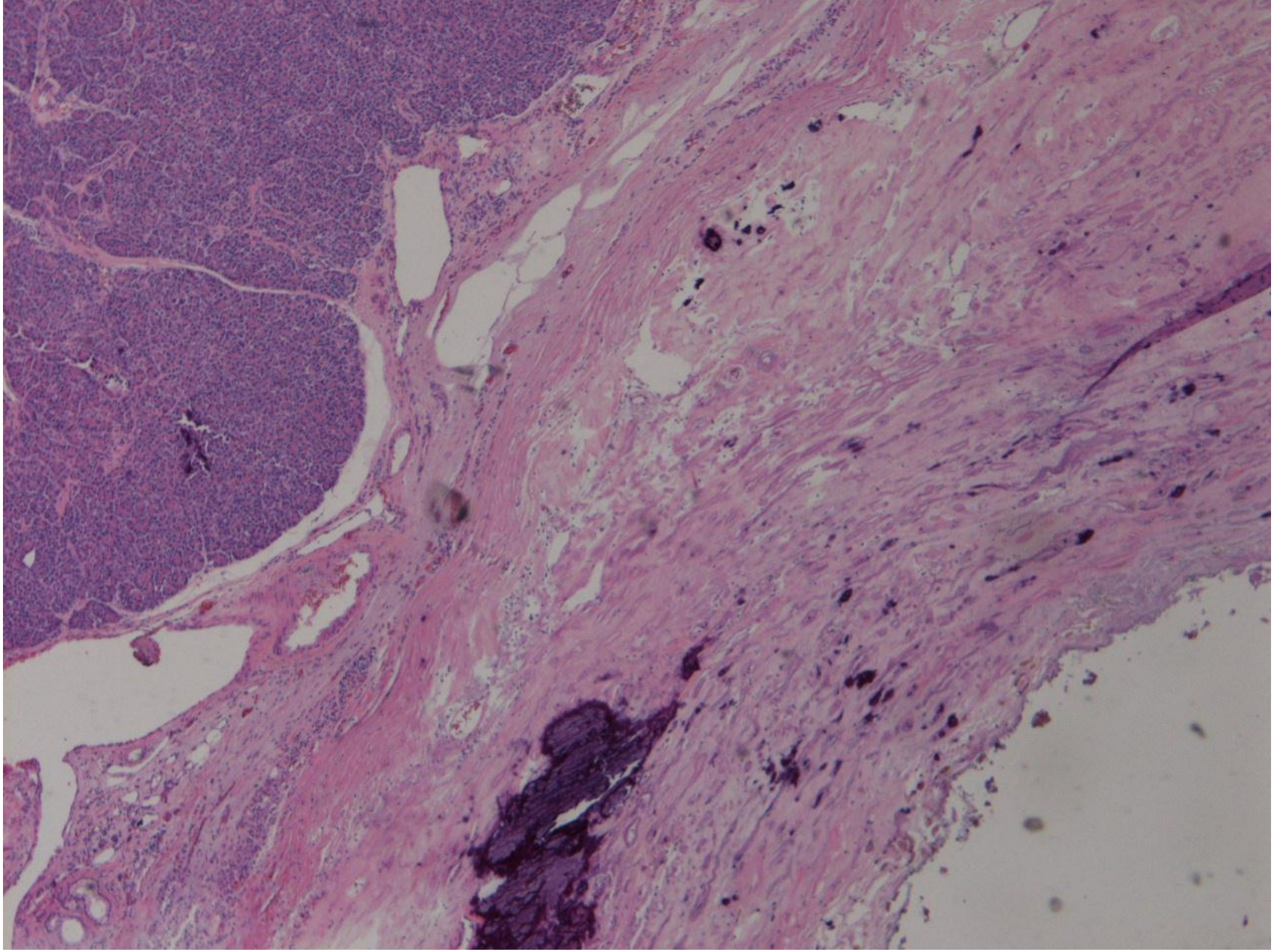
Presented by Dr. W.K. Kwang
Anatomical Pathology
2014-10-25
Path No. 103-12209



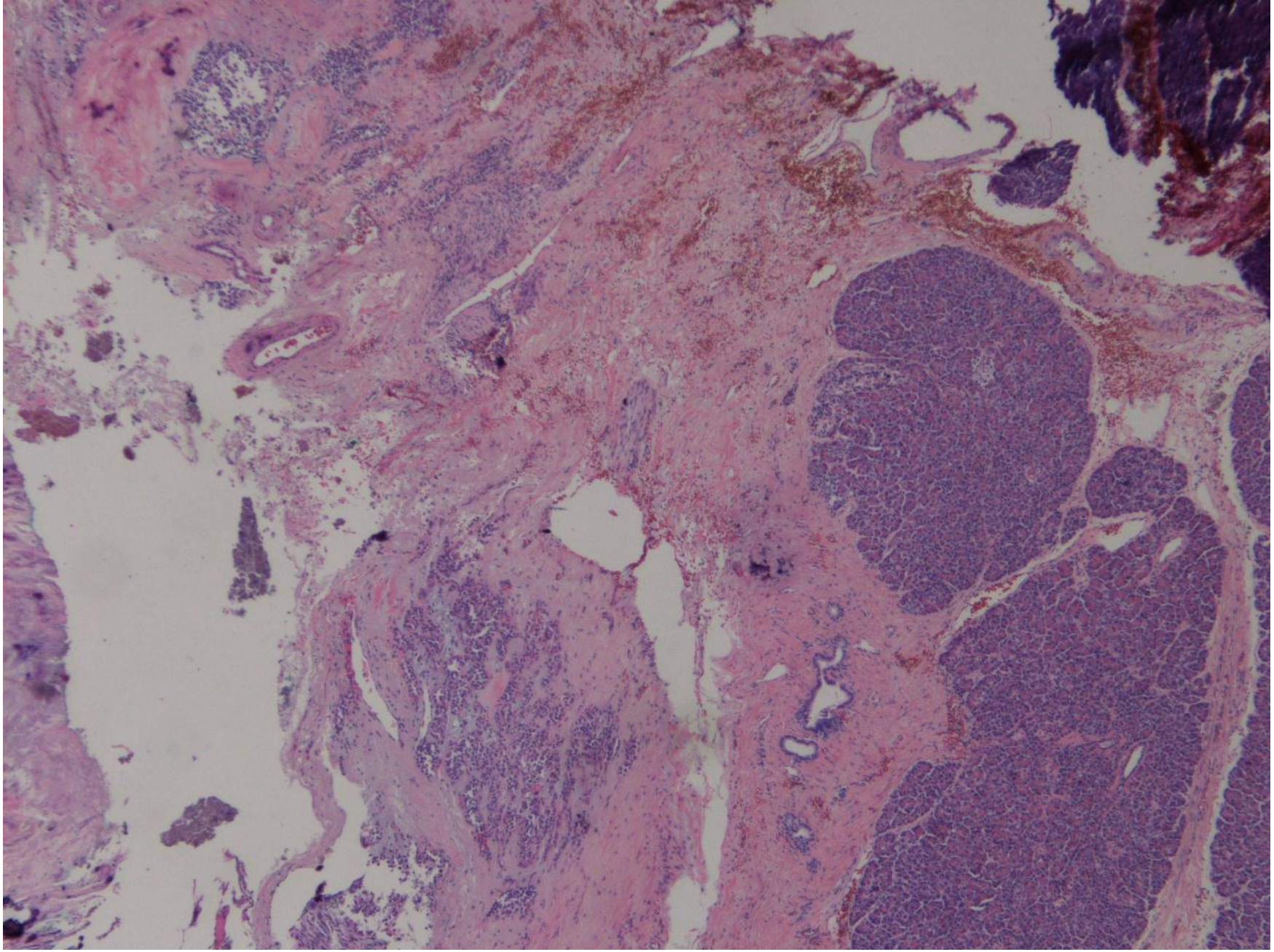
103-12209 pancreas and tumor, 20X



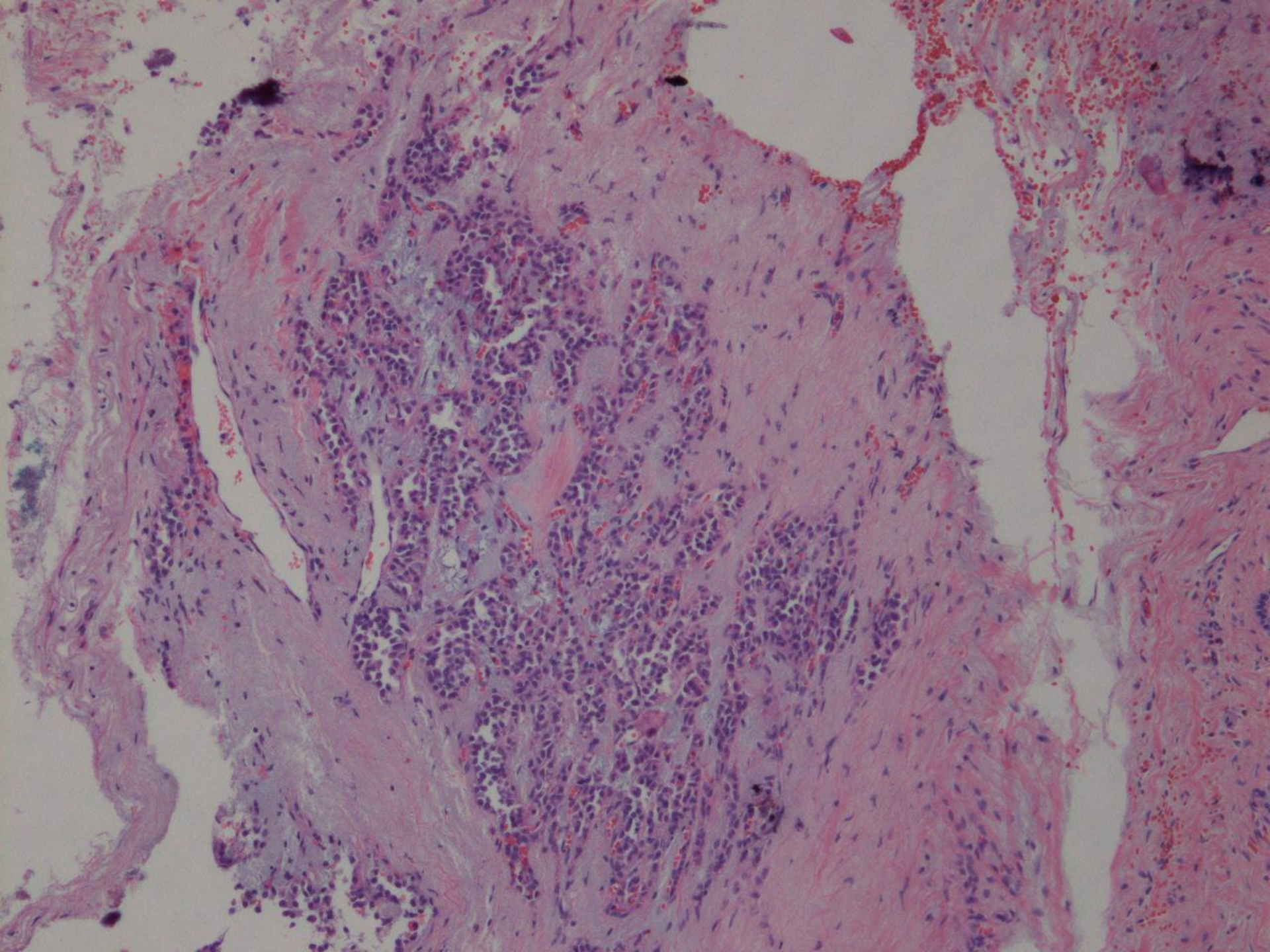
103-12209 central degeneration, 40X

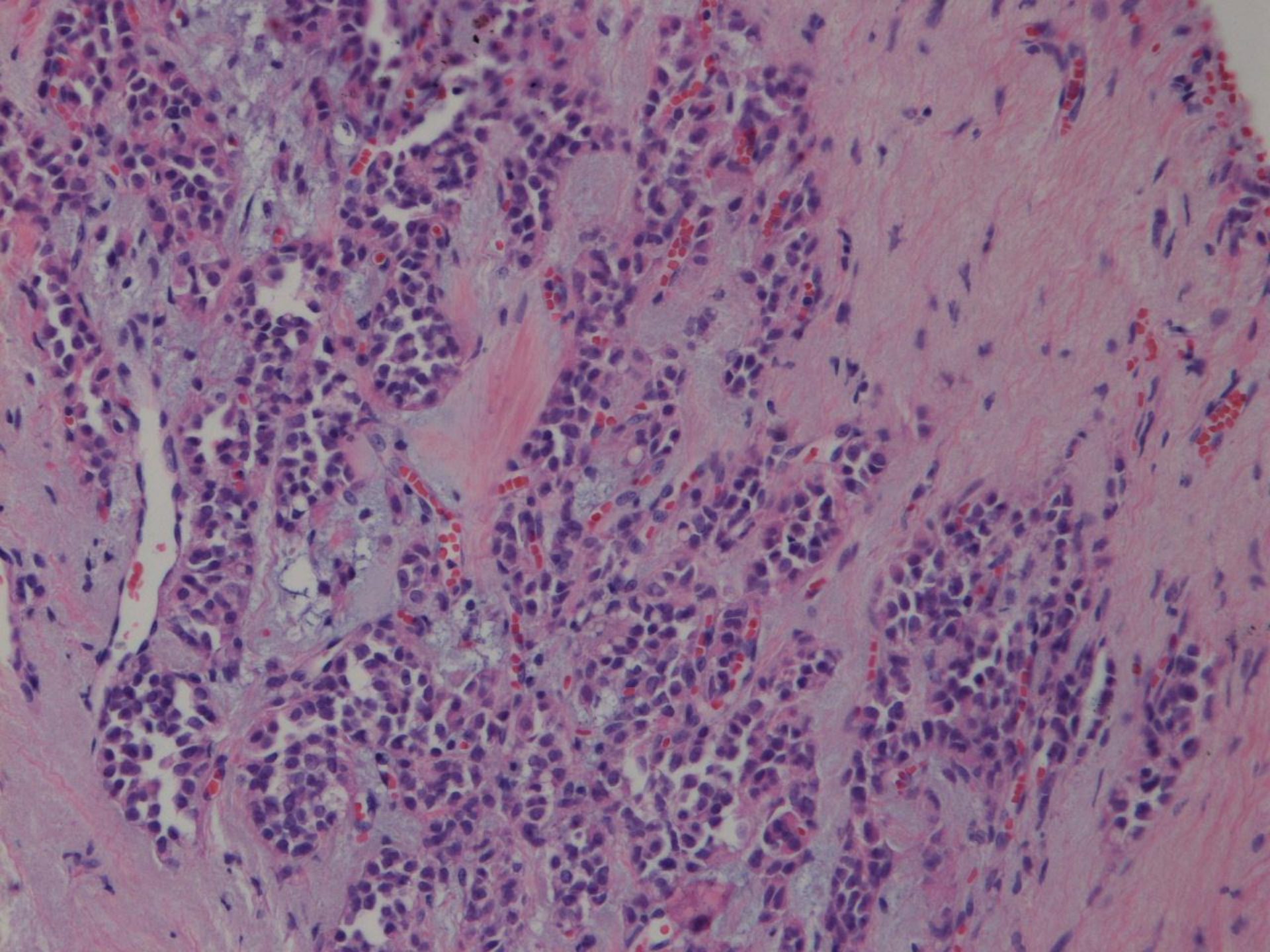


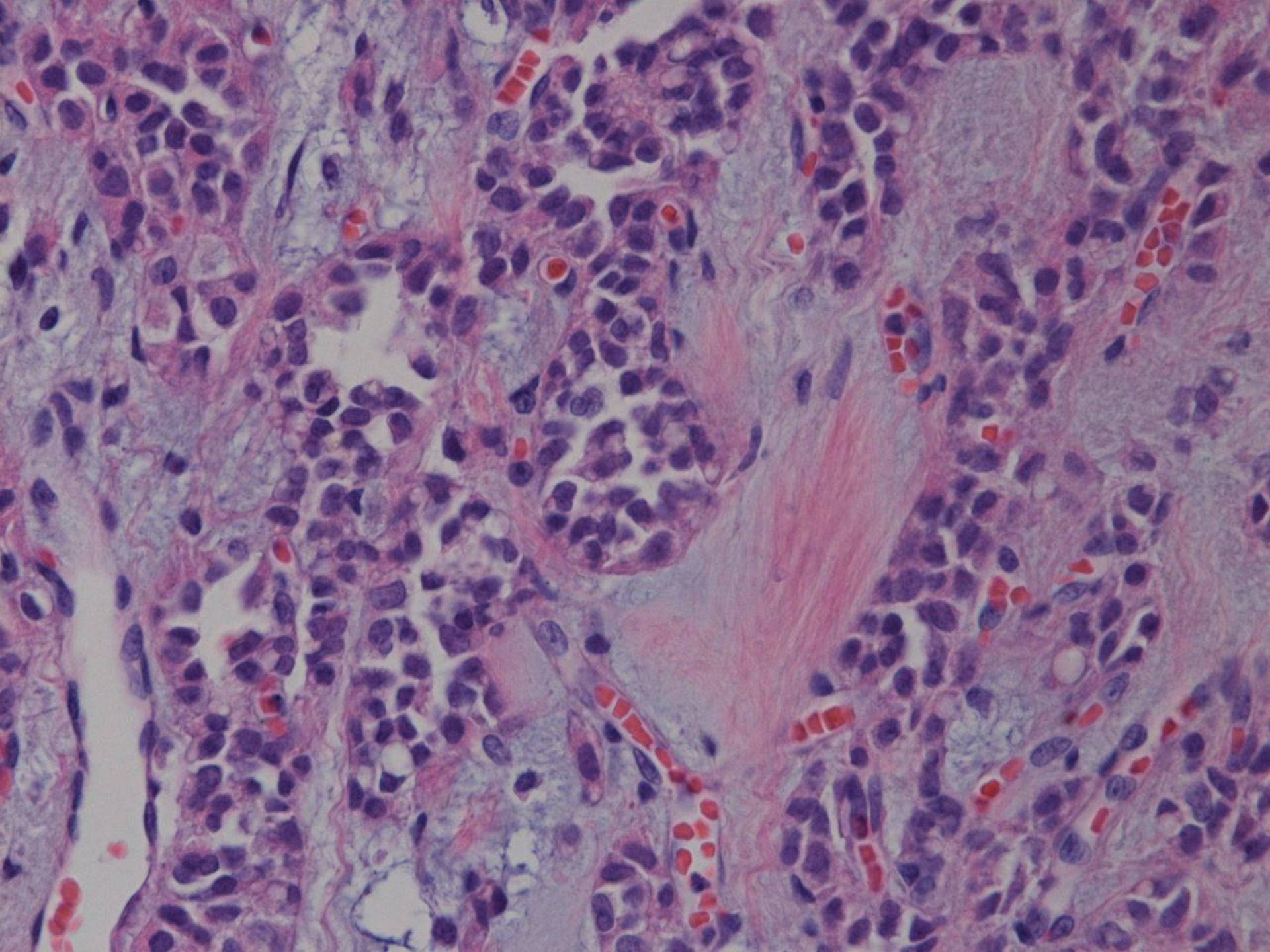
Tumor capsule with calcification 100X

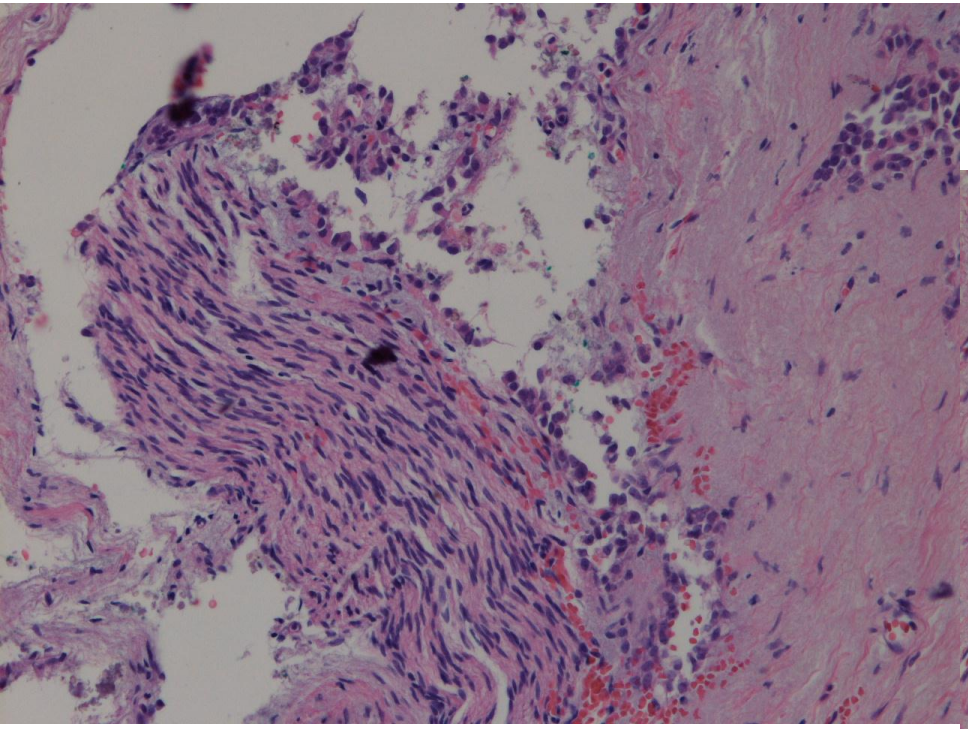


Tumor cells at the peripheral of the tumor, 40X



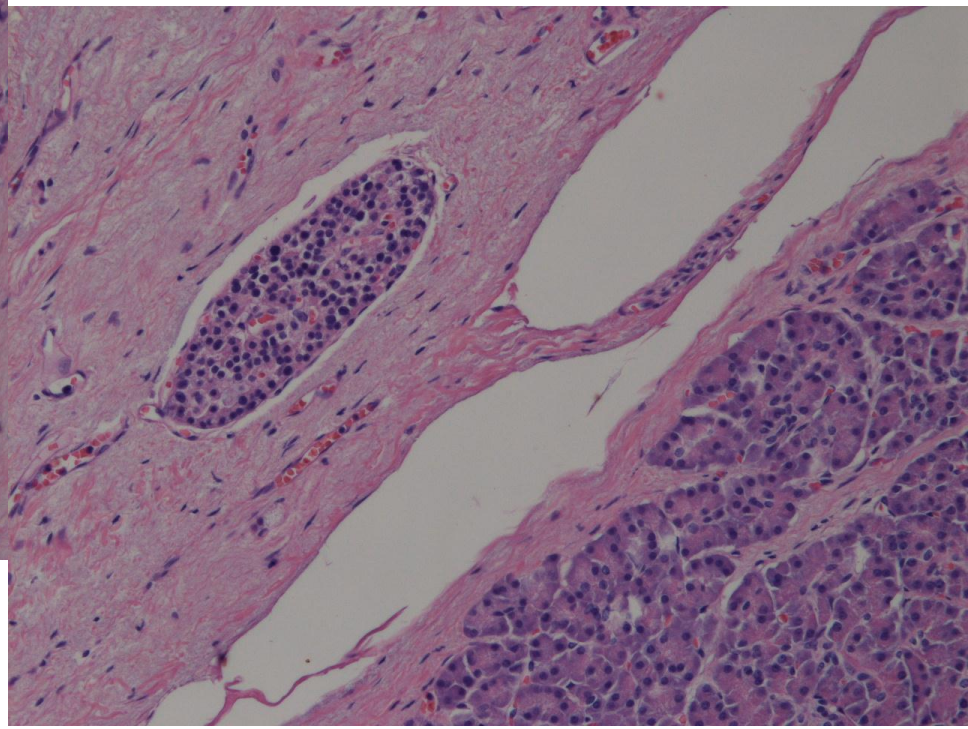


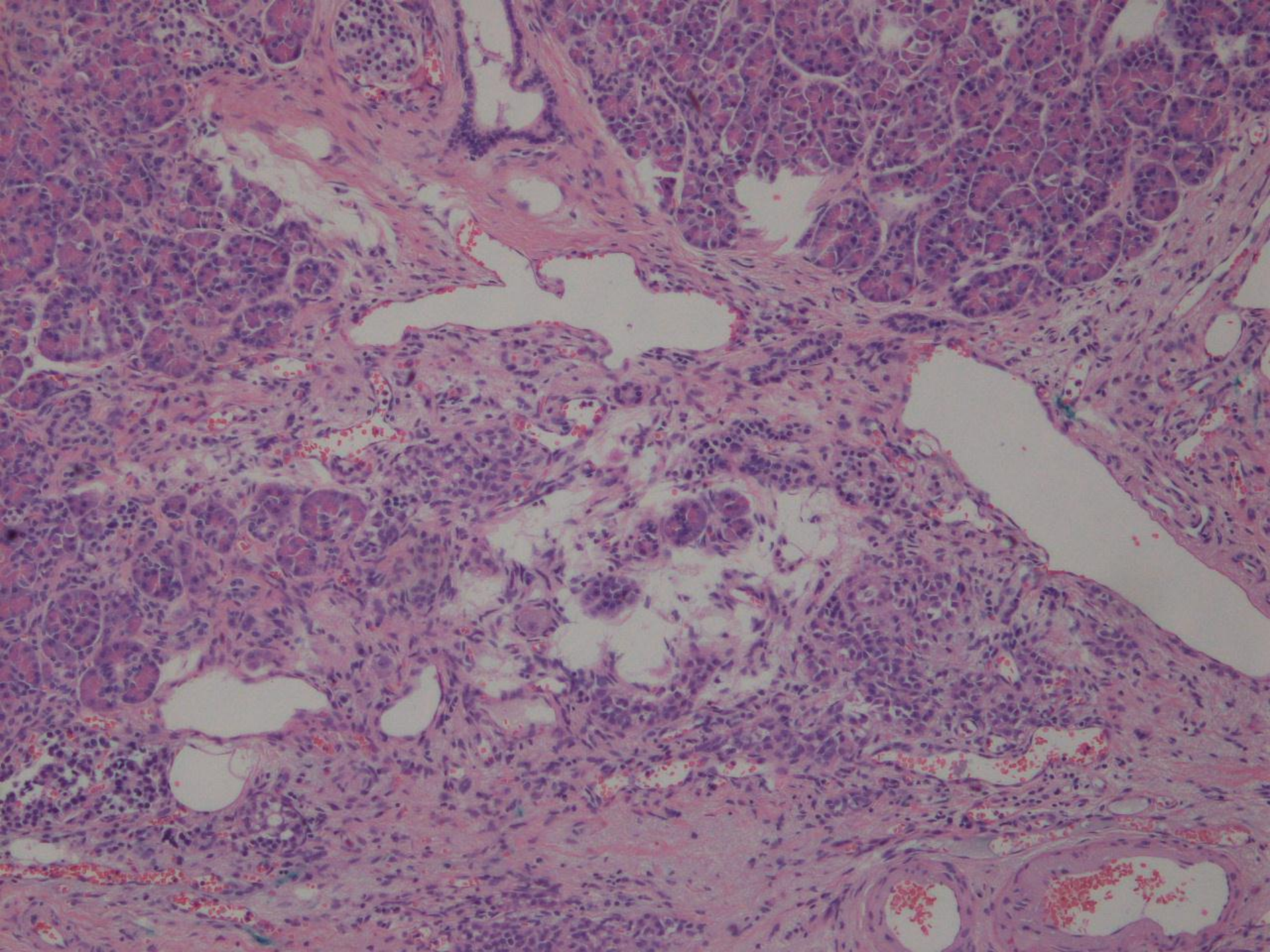


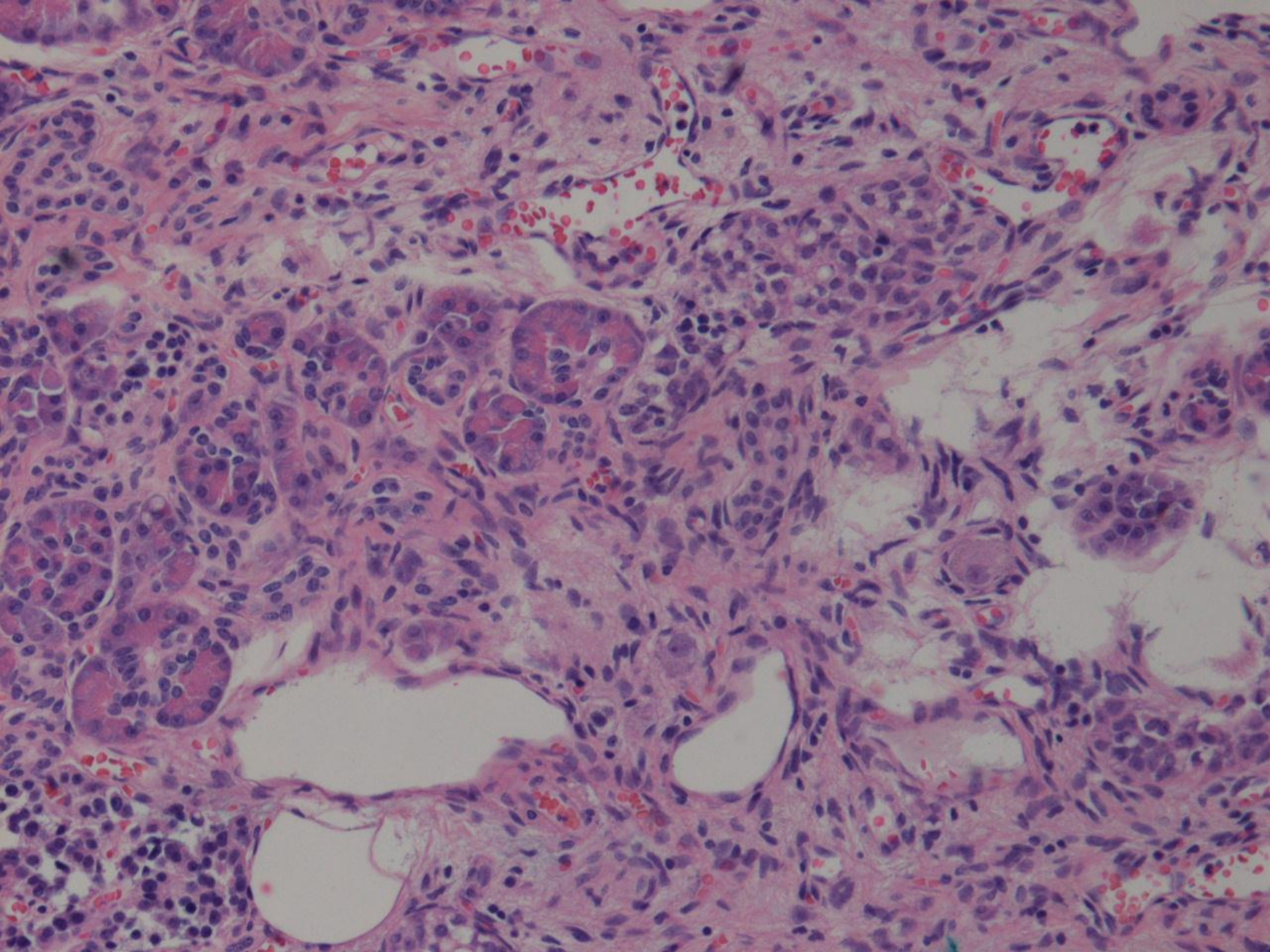


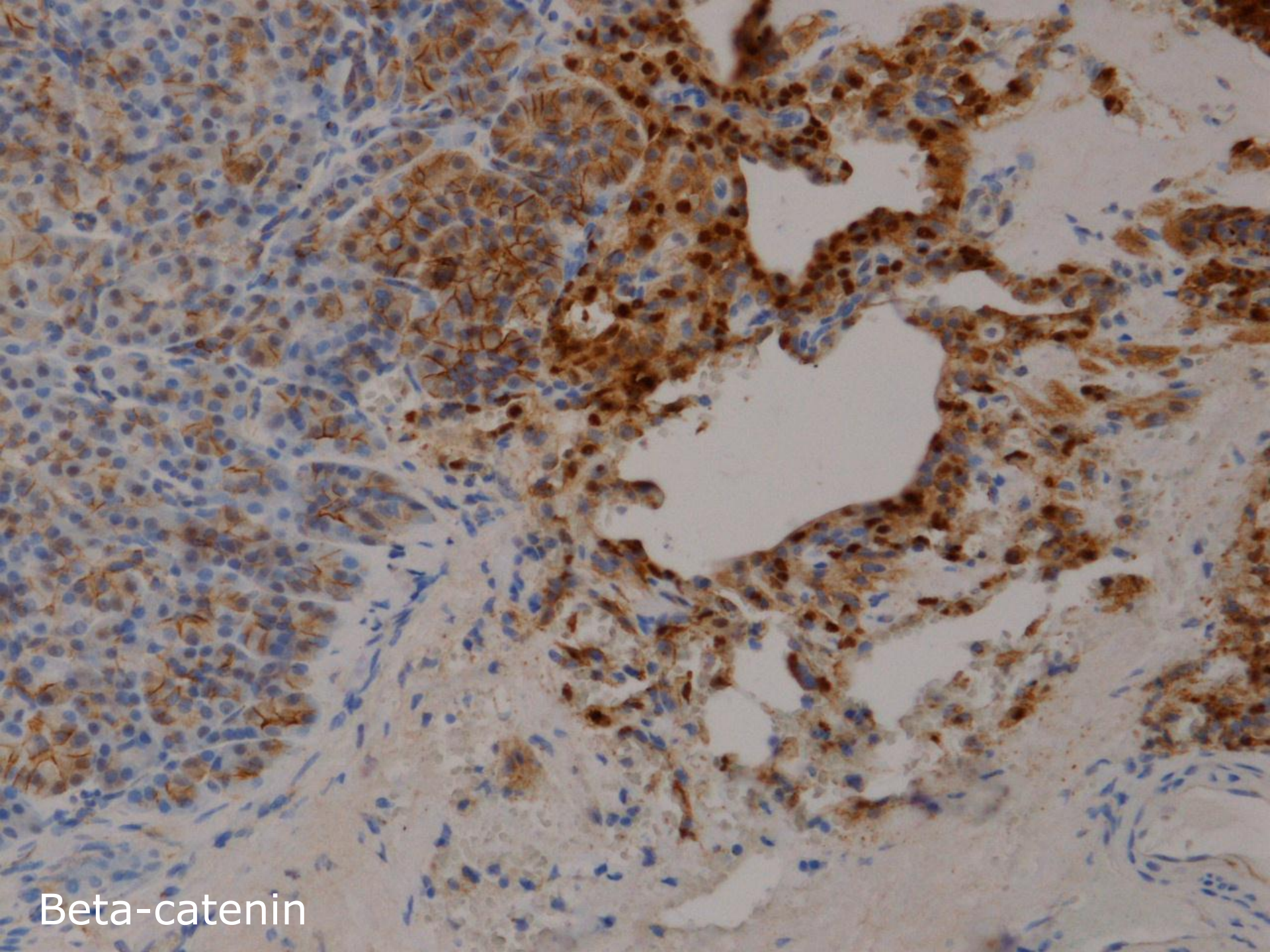
Suspicious nerve invasion

Suspicious vascular invasion








Beta-catenin

Pathological Diagnosis

Solid-pseudopapillary neoplasm

Epithelial tumours

Benign	
Serous cystadenoma	8441/0[1]
Mucinous cystadenoma	8470/0
Intraductal papillary-mucinous adenoma	8453/0
Mature teratoma	9080/0
Borderline (uncertain malignant potential)	
Mucinous cystic neoplasm with moderate dysplasia	8470/1
Intraductal papillary-mucinous neoplasm with moderate dysplasia	8453/1
Solid-pseudopapillary neoplasm	8452/1
Malignant	
Ductal adenocarcinoma	8500/3
Mucinous noncystic carcinoma	8480/3
Signet ring cell carcinoma	8490/3
Adenosquamous carcinoma	8560/3
Undifferentiated (anaplastic) carcinoma	8020/3
Undifferentiated carcinoma with osteoclast-like giant cells	8035/3
Mixed ductal-endocrine carcinoma	8154/3
Serous cystadenocarcinoma	8441/3
Mucinous cystadenocarcinoma	8470/3
– non-invasive	8470/2
– invasive	8470/3
Intraductal papillary-mucinous carcinoma	8453/3
– non-invasive	8453/2
– invasive (papillary-mucinous carcinoma)	8453/3
Acinar cell carcinoma	8550/3
Acinar cell cystadenocarcinoma	8551/3
Mixed acinar-endocrine carcinoma	8154/3
Pancreatoblastoma	8971/3
Solid-pseudopapillary carcinoma	8452/3
Others	

Non-epithelial tumours

Secondary tumours

[1] Morphology code of the International Classification of Diseases for Oncology (ICD-O) {542} and the Systematized Nomenclature of Medicine (http://snomed.org). Behaviour is coded /0 for benign tumours, /1 for unspecified, borderline or uncertain behaviour, (/2 for in situ carcinomas) and /3 for malignant tumours.

2000 WHO classification of SPN

Solid-pseudopapillary neoplasm

- A low grade malignant neoplasm
  2009 WHO classification (8452/3)
- Synonyms

  solid-pseudopapillary tumor
  papillary epithelial neoplasm
  papillary cystic neoplasm (tumor) (carcinoma)
  solid and papillary neoplasm
  papillary cystic tumor
  Frantz's tumor

General Features

- First recognized by Frantz in 1959
- 1-3% of all pancreatic tumor (Inter Med Resear, 2013)
- M:F=1:7-9 (6.85, 8.37, 9)
- Mean age: 28 (27-28)

  men are 5-10 years older than women

Clinical Features

Table 1 Symptoms of SPT patients (n = 473)

Symptoms	Patients (n)	%
Abdominal pain	178	37.63
Abdominal mass	170	35.94
Abdominal discomfort	155	32.77
Asymptomatic	150	31.70
Vomiting	25	5.29
Post-trauma	23	4.86
Nausea	19	4.01
Back pain	17	3.59
Jaundice	17	3.59
Anorexia	11	2.33
Weight loss	9	1.90
Fever	7	1.48
Other symptoms	5	1.06

SPT: Solid pseudopapillary tumor.

Localization

- No preferential localization (third rule)
- Head (39.8%), tail (24.1%), body and tail (19.5%), body (11.2%)
- Extrapancreatic (1.8%): retroperitoneum, mesocolon

(*World J Gastroenterol, 2010*)

Gross Pathologic Features

- Mean size: 8-10 cm (0.5-25)
- Well-encapsulated and usually well-demarcated
- Zones of hemorrhage, necrosis, and cystic degeneration
- Solid areas: light brown to yellow

Microscopic Pathology

- Solid areas: sheets of relatively uniform polygonal cells admixed with delicate capillary-sized blood vessels
- Pseudopapillae
- Hemorrhagic-necrotic structures
- Pseudocyst structure

Immunohistochemical Features

- Positive

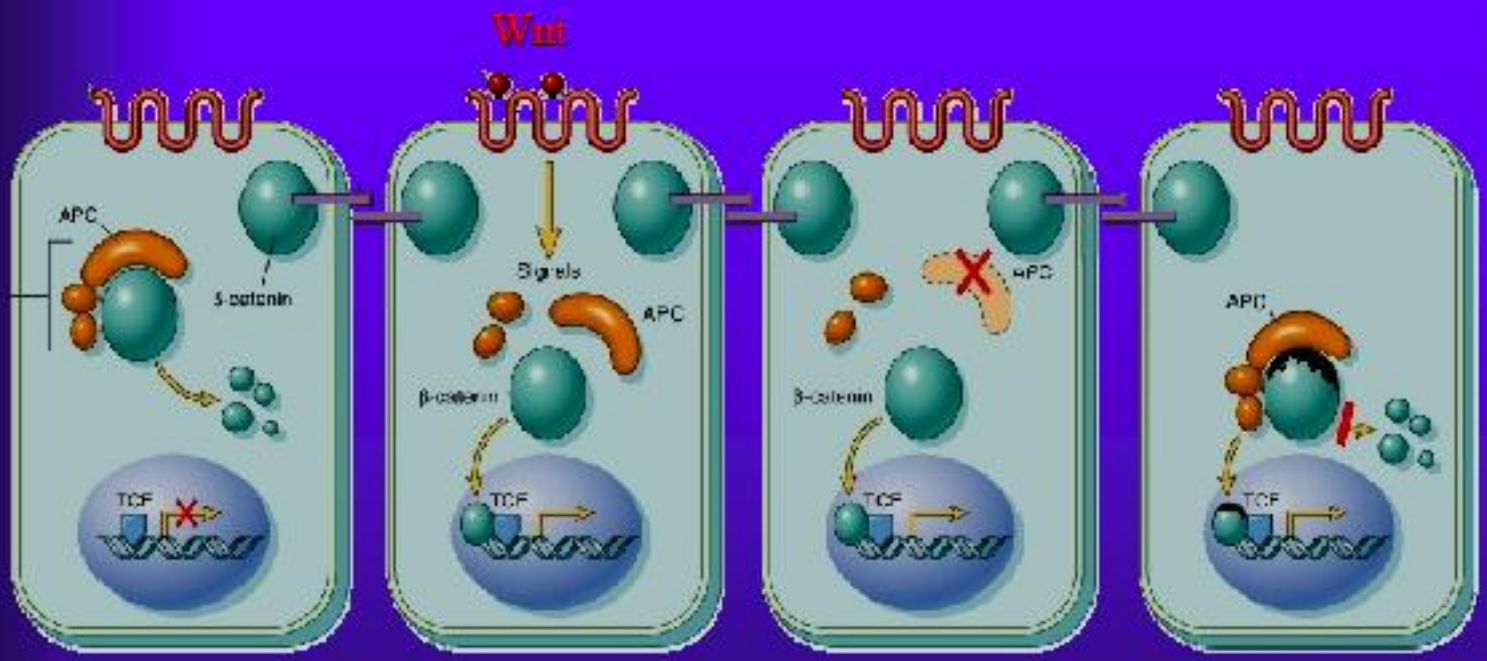
  alpha-1 antitrypsin (94.6%)
  alpha-1 antichymotrypsin (90.7%)
  vimentin (93.1%)
  CD56 (67.4%)
  CD10 (64.7%)
  PR (56.7%)
  beta-catenin (>90%)

  A core panel of markers that includes beta-cateinin, CD10, chromogranin and vimentin is recommended to establishing the diagnosis

Molecular pathology

- Almost all (90-100%) SPN harbor somatic point mutations in exon 3 of the beta-catenin gene (CTNNB1)
- Resulting the consequence of stimulation of transcription of genes including *c-myc* and *cyclin-D1*

Pathogenesis



No proliferation

Proliferation

Normal growth

Proliferation

Proliferation

Cancer

Differential Diagnosis

- Pseudocyst (grossly)
- Pancreatic endocrine neoplasm
- Acinar cell carcinoma

Prognosis

- Five-year survival rate: 95% (*J Am Coll Surg 2005*)
- Metastasis or recurrence: 15%

  The most common sites: liver, regional lymph node, mesentery, omentum, peritoneum (*Am J Sur Pathol 2005*)
- No proven morphologic predictors of outcome

  worse predictors of outcome include

  DNA aneuploidy, older patients, elevated proliferating index, tumor necrosi, significant nuclear atypia