

Endoscopic ultrasound-guided fine-needle aspiration of the pancreas

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Summary

- What is EUS
- Utility of EUS FNA in pancreas
- Technical considerations
- Clinical considerations
 - Local figures

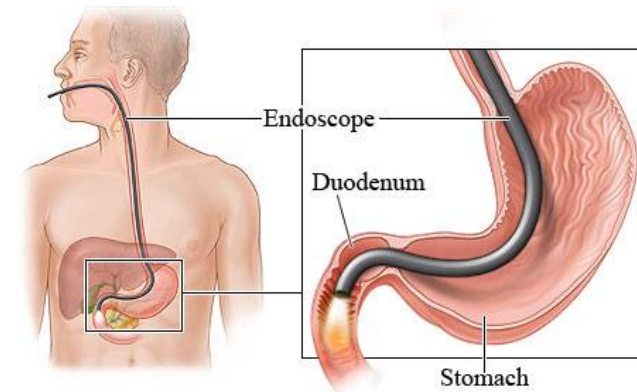
What is EUS?

Combination of

■ Endoscopy

and

■ Ultrasound



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Anatomical sites

- Mediastinal (+/- EBUS)
- Oesophago-gastric
- Ano-rectal
- Hepatico-biliary
- Pancreatic

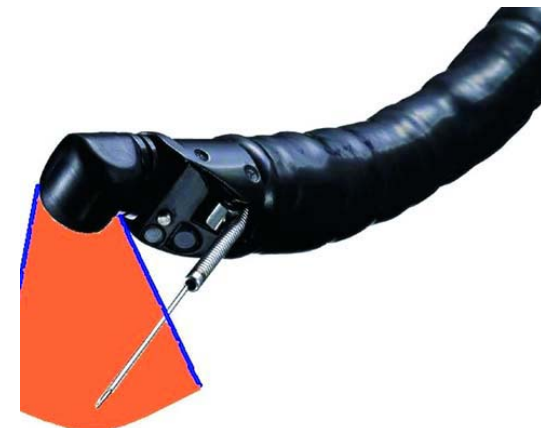
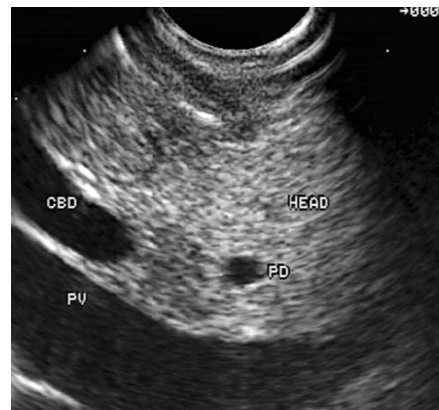
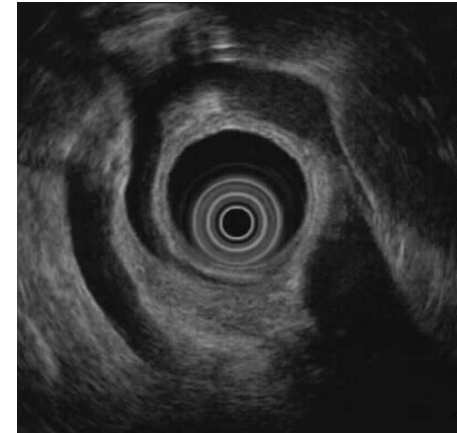
EUS

Radial

- Cross-sectional
- Cannot visualise instruments
- Only diagnostic

Linear Array

- Planar
- Instruments in field
- Allow **biopsy**
- Therapeutic



Pancreatic uses

Diagnostic

- Ultrasonography
- FNA
- Trucut

Therapeutic

- Transgastric drainage of pseudocysts
- Coeliac plexus blocks
- Transgastric biliary drainage

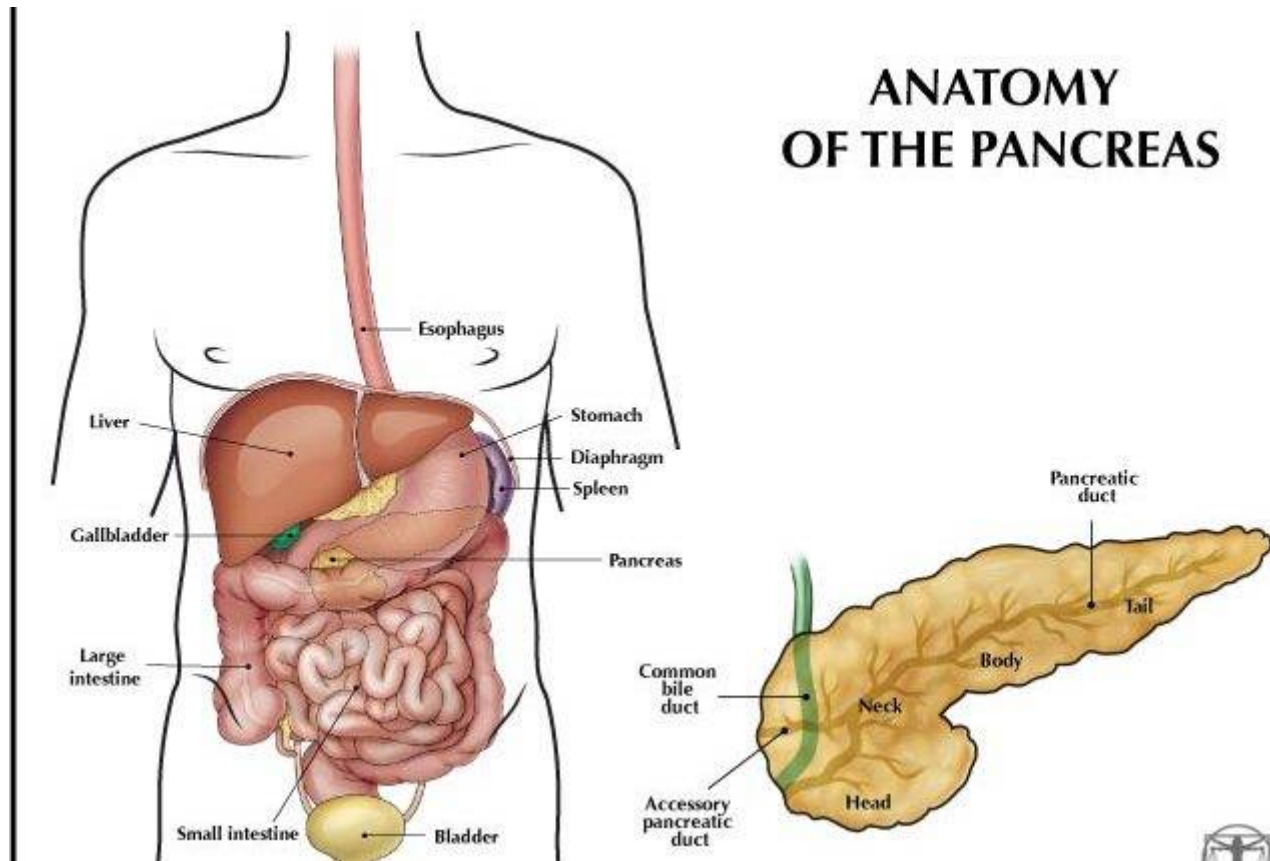
Role of EUS FNA in pancreas

Reasons for developing role:

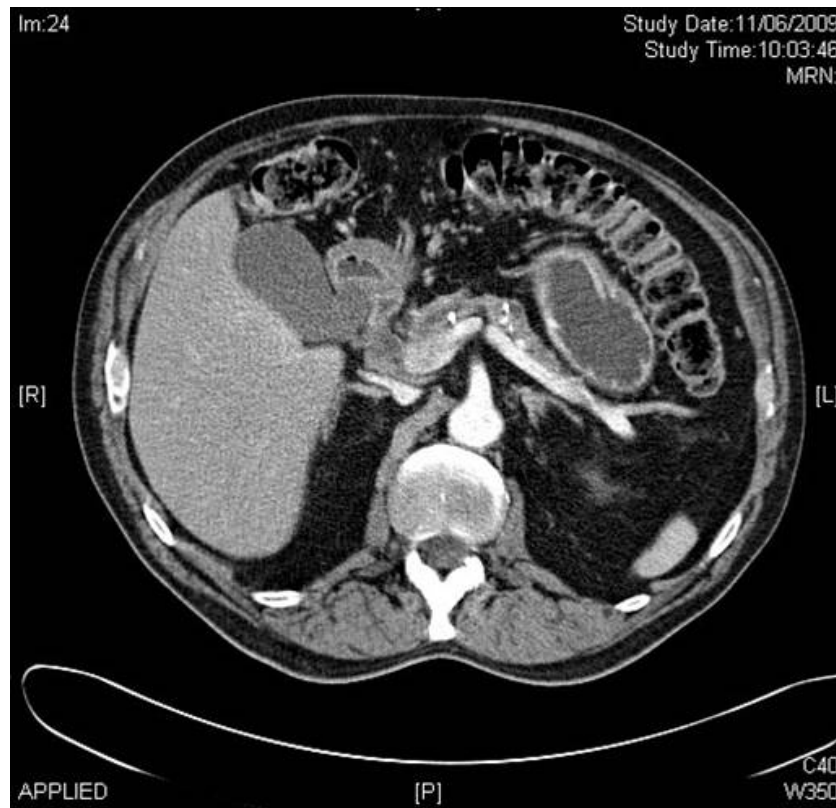
- Technical
- Clinical

Technical considerations

Anatomy



Anatomy



EUS-guided vs CT-guided

EUS

- Smaller lesions
- Minimal risk of seeding
- Risks of bleeding, pancreatitis, perforation
- Sedation / invasive
- Less available

CT

- Larger sample?
- Risk of seeding track
- Risk of bleeding, pancreatitis, perforation
- Less invasive
- Widely available

EUS FNA – method

- Sedation or GA
- Localise lesion in field
- Puncture with 19, 22, 25 Fr needle
- Suction if necessary
- Process sample
- Assess sample
- Repeat 3-6 times

Processing of sample

Cytology

- In room cytotechnician; trained and experienced pancreatic cytologist
- Rapid air-dried & wet-prep smears
- Stain with Diff-Quik for immediate assessment of cellularity & adequacy
- Needle wash & clot for IHC
- Sample for Flow Cytometry if indicated

Biochemistry

- Cystic lesions: CEA, amylase, mucin; assess viscosity

Cases so far

- 55 cases undergone pancreatic FNA
- Sedation in 52, GA in 3
- Duration 30-90 mins
- Prophylactic antibiotics in cystic
- One complication – pancreatitis
 - Systematic review: 1-2% risk, mostly pancreatitis¹

¹Wang et al, Gastrointest Endosc. 2011 Feb;73(2):283-9

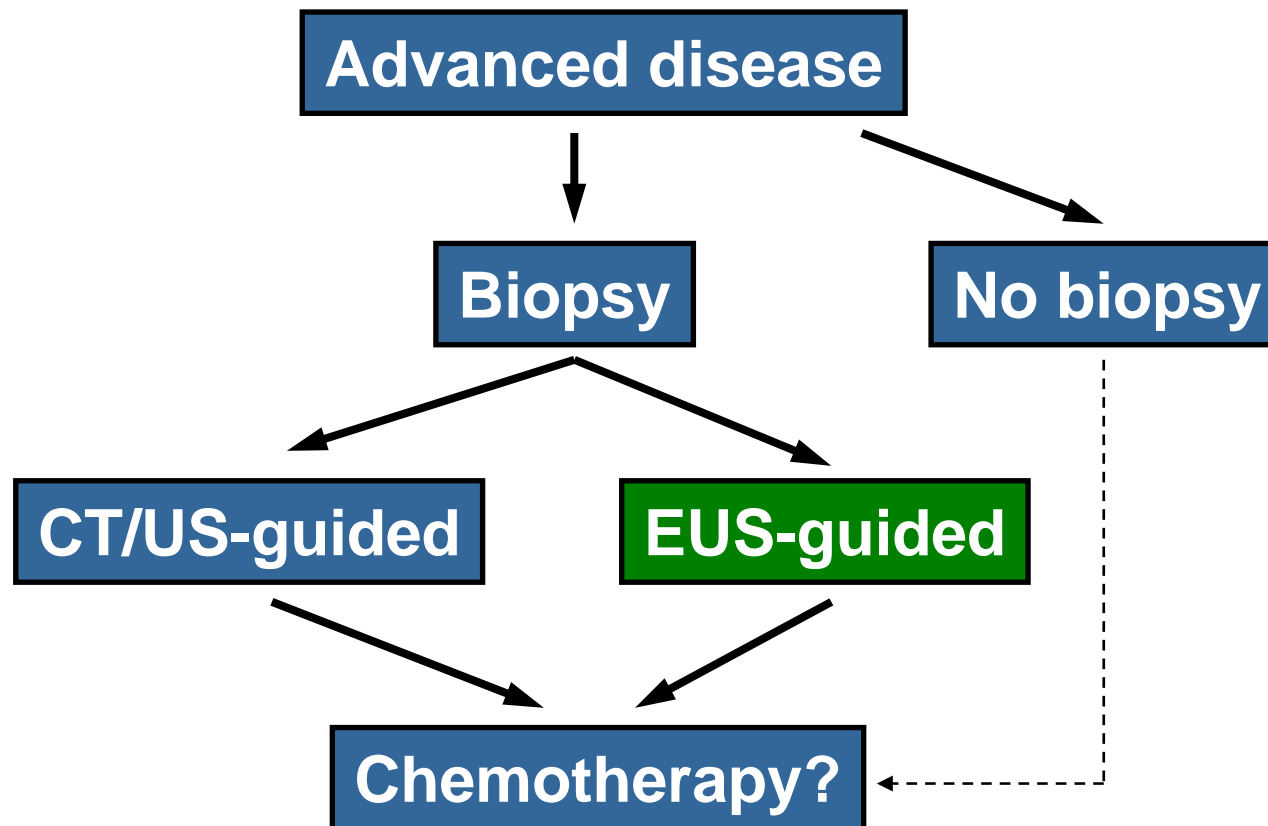
Clinical considerations

Solid Lesions

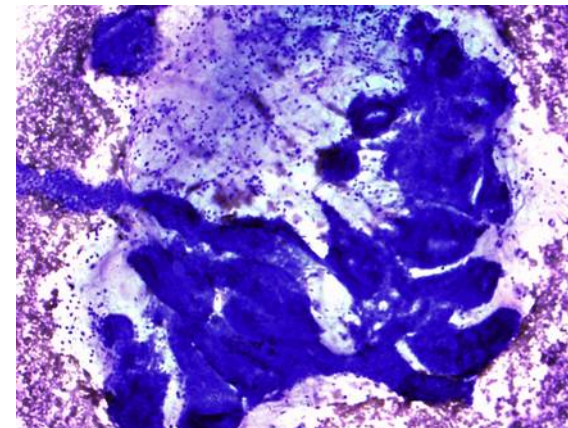
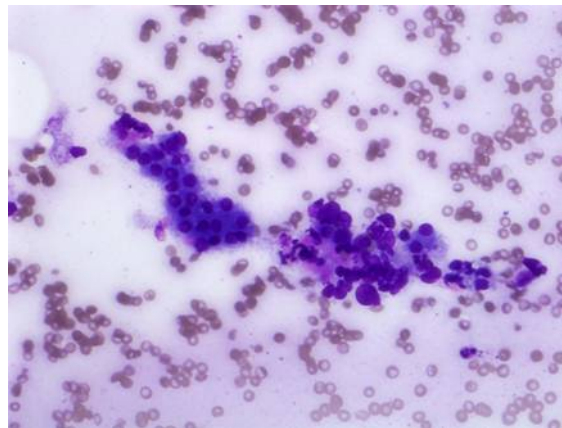
Background – pancreatic cancer

- 4th commonest cause of cancer death
- 95% exocrine origin, 5% endocrine
- 85% are ductal adenocarcinomas
- Mostly presents late and irresectable
- 15-20% resectable, of these <20% 5yr survival

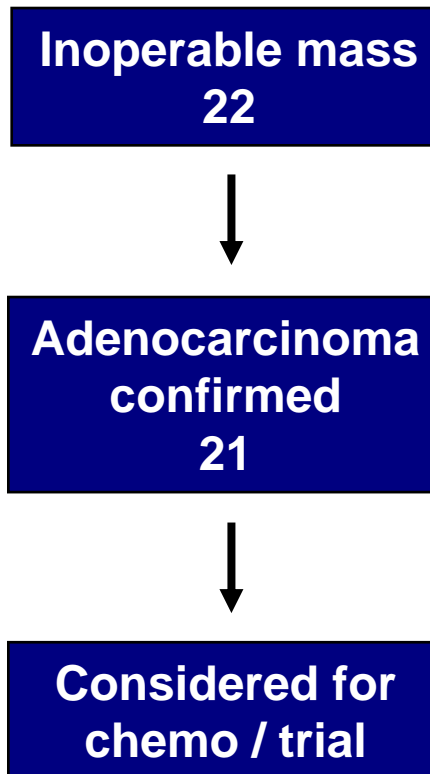
Advanced / inoperable disease
Aim: confirm pathological
diagnosis



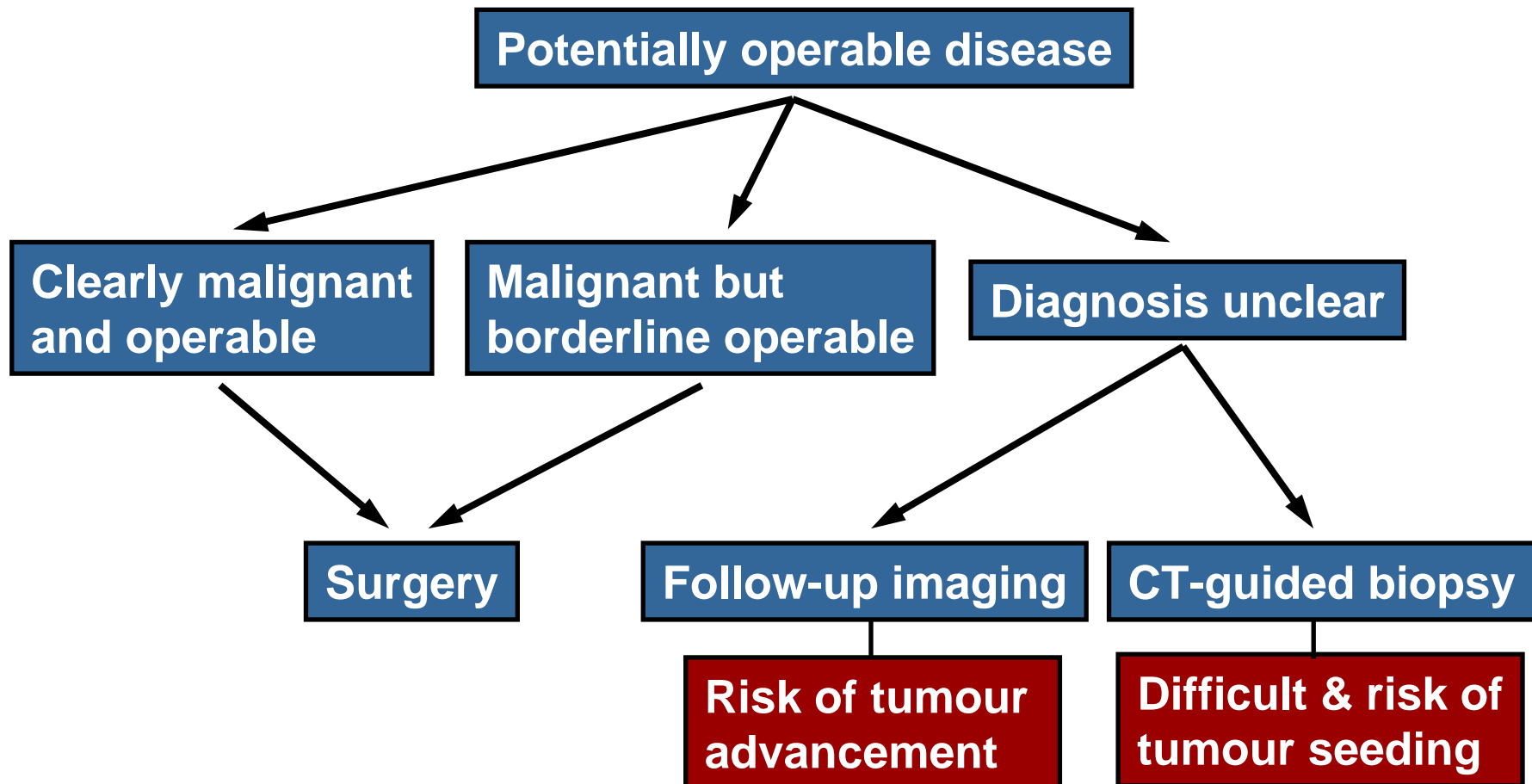
Example: irresectable mass



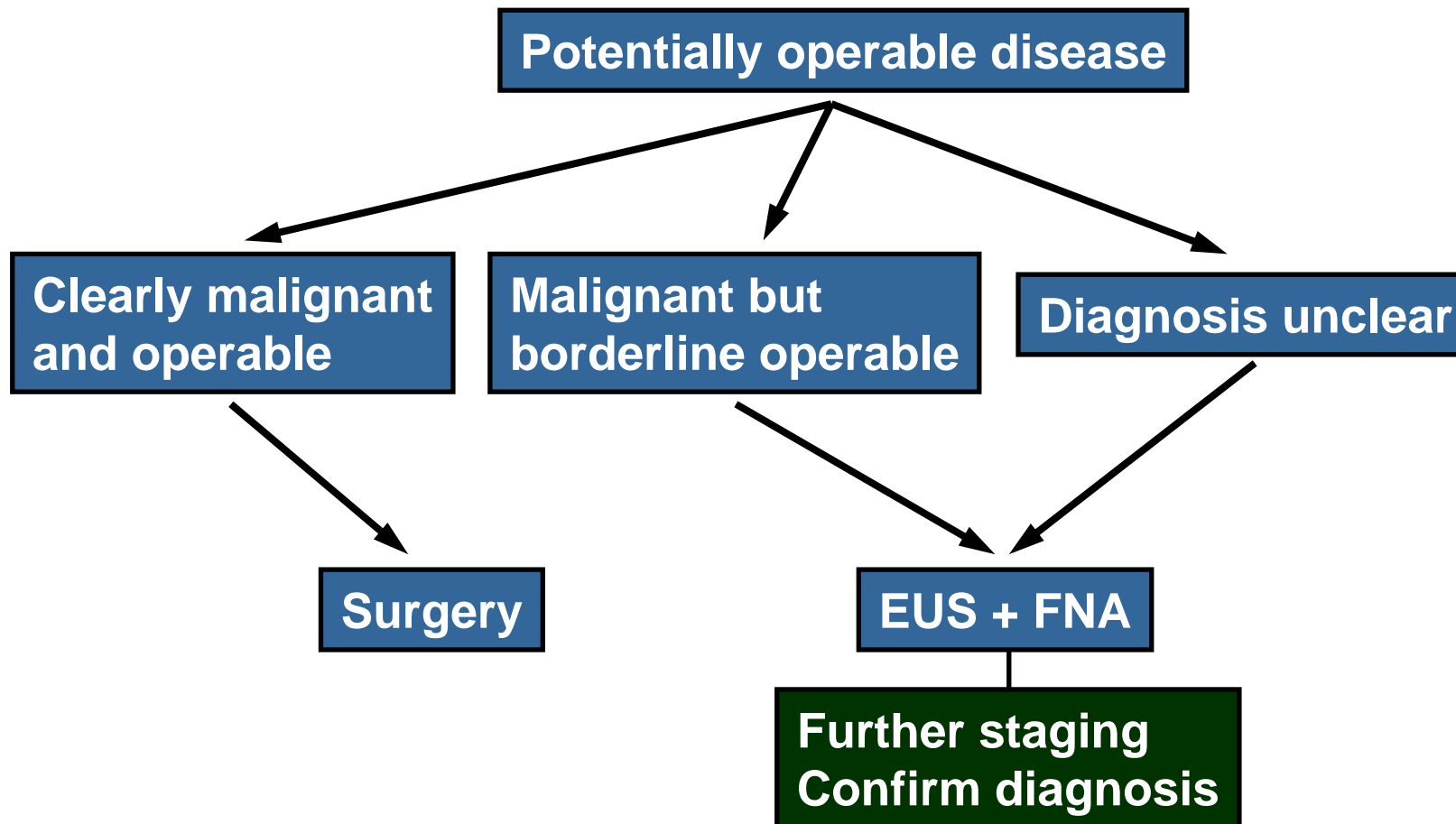
Advanced disease – local figures



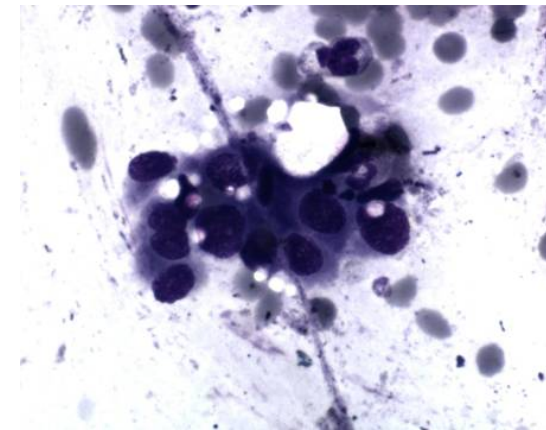
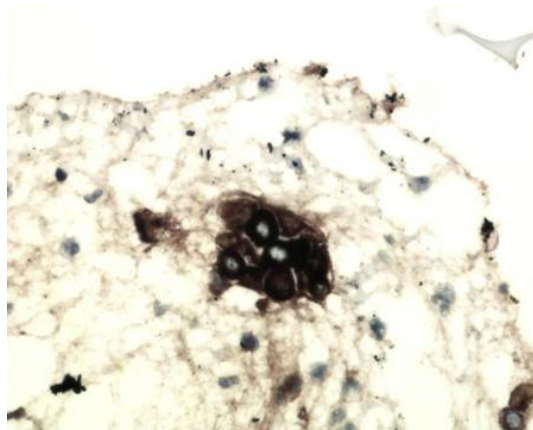
Potentially operable disease



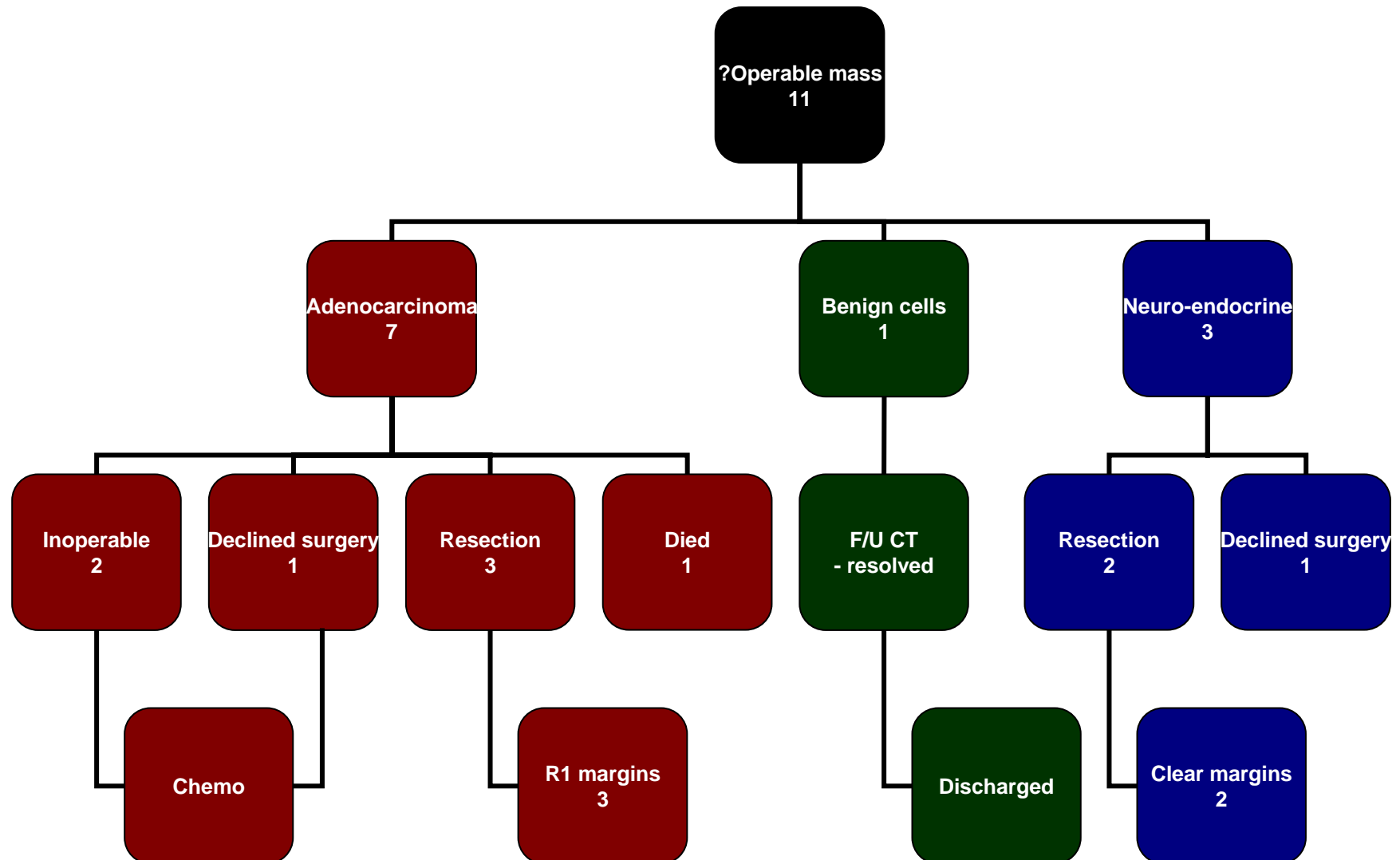
Potentially operable disease



Example: operable mass



Potentially operable disease – local figures



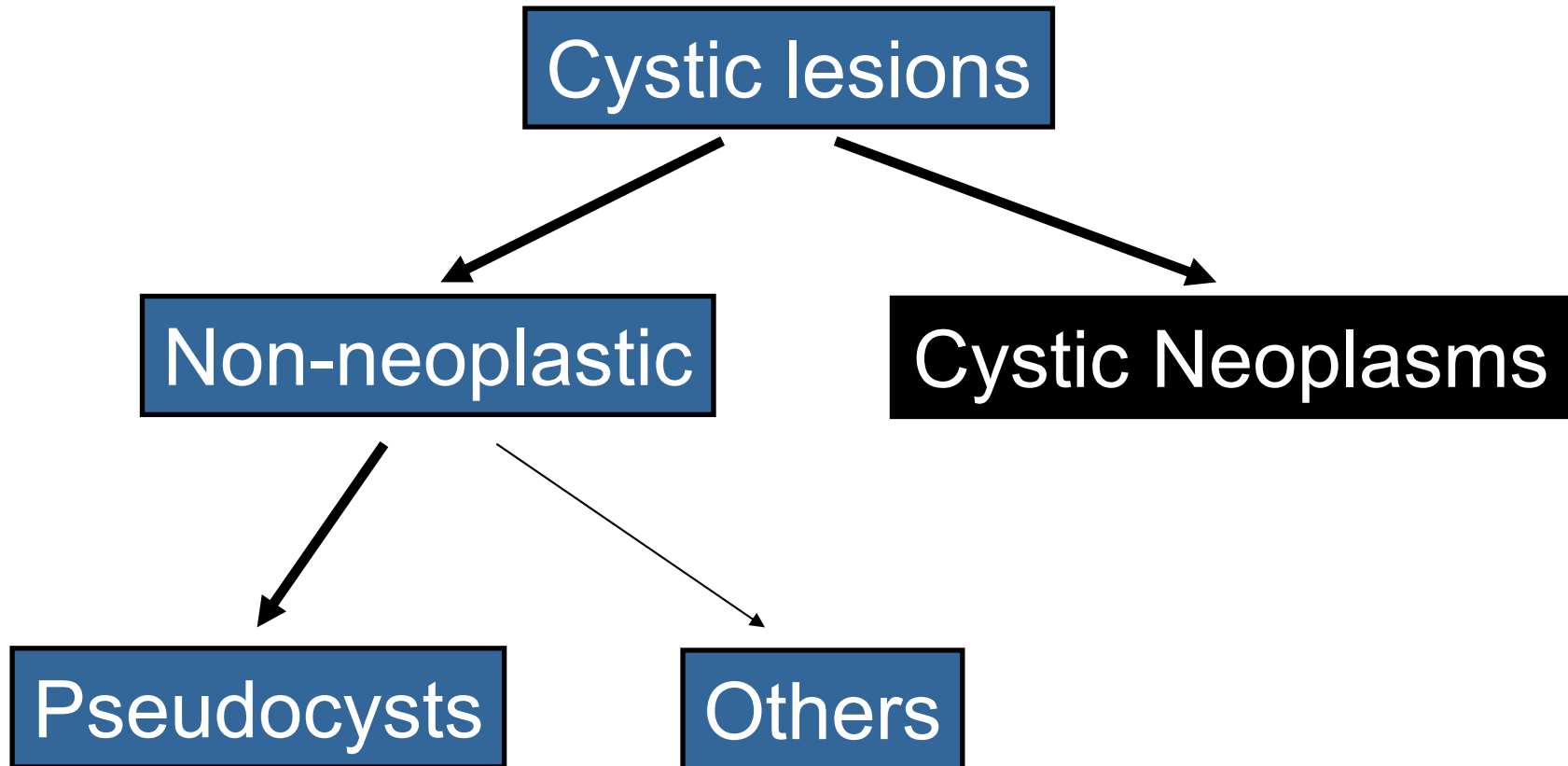
Performance in solid lesions

Using surgical pathology or clinical behaviour as gold standard:

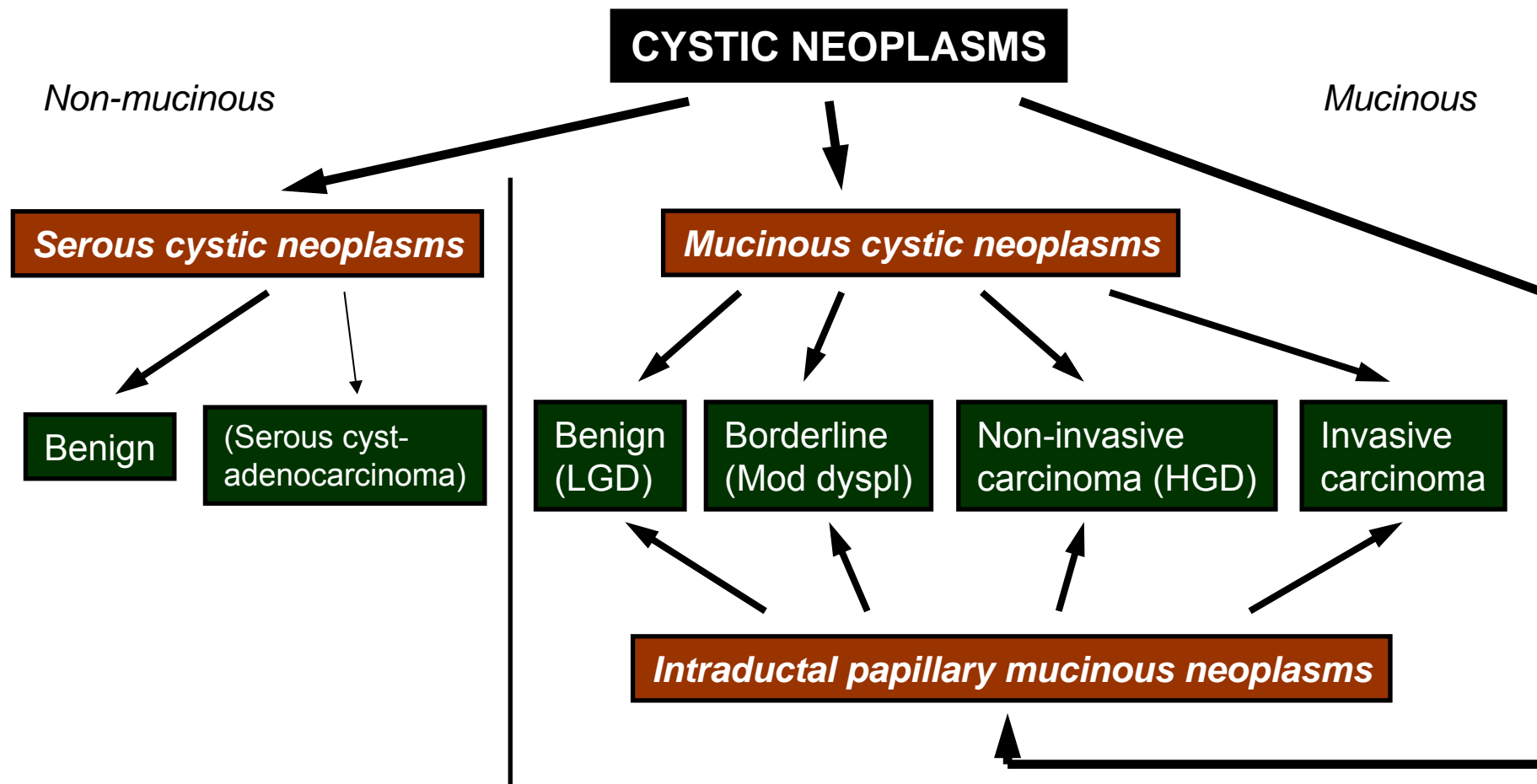
- Sensitivity 97%
- Specificity 100%
- PPV 100%
- NPV 50%
- Accuracy 97%

Cystic Lesions

Cystic lesions



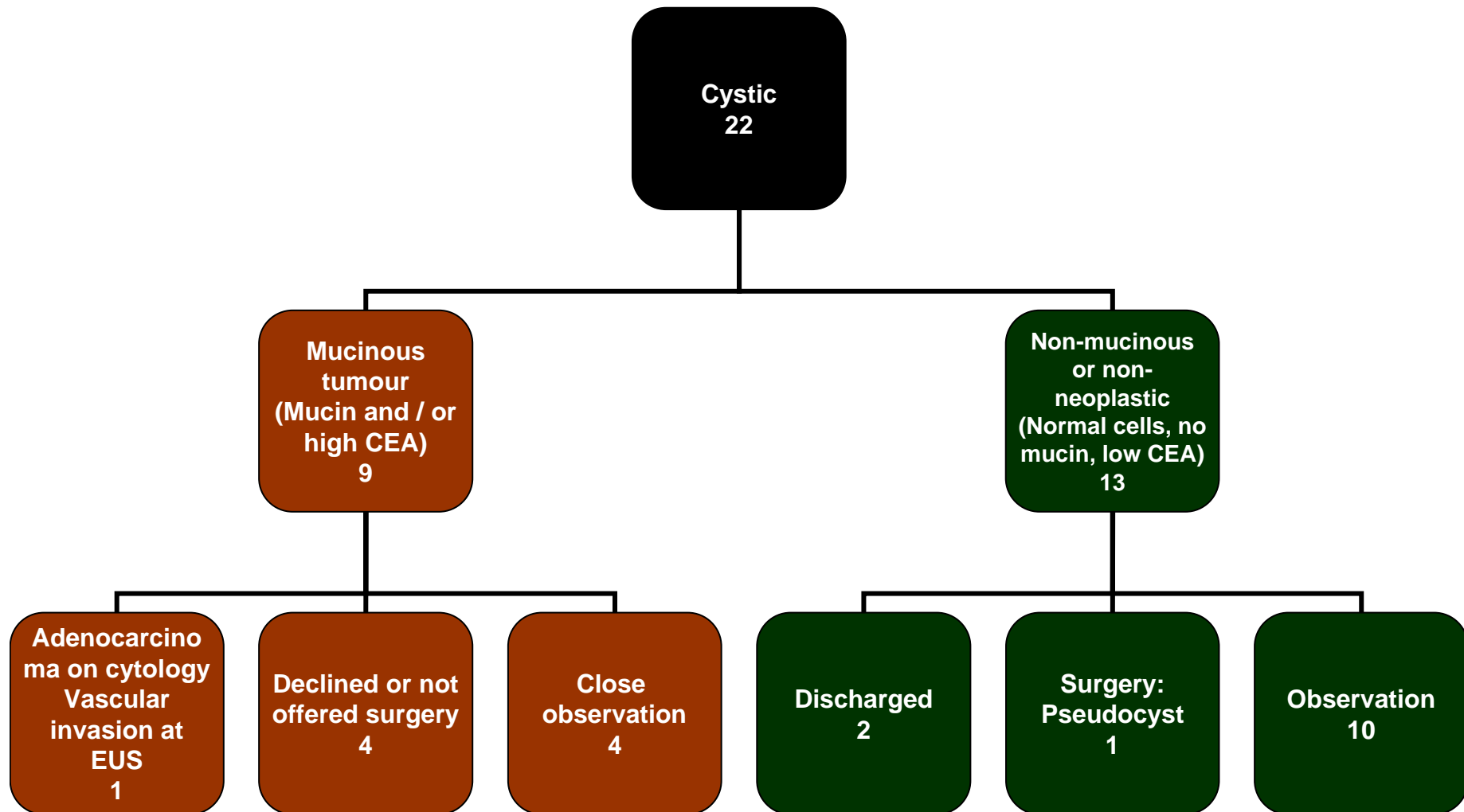
Pancreatic cystic neoplasms



Aims of EUS +/- FNA in cystic lesions

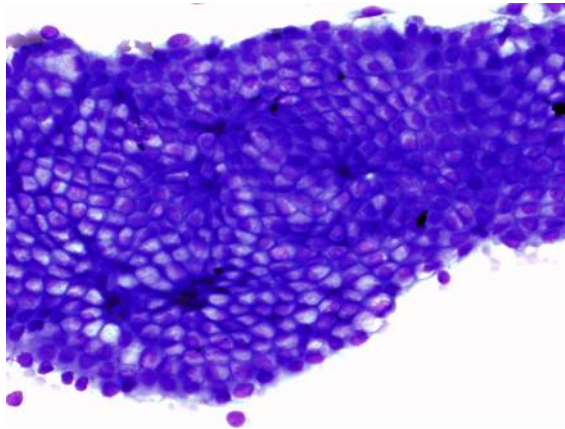
- Detect malignancy
 - EUS: Invasion, lymphadenopathy
 - FNA: Malignant cytology
- Detect risk factors for malignancy
 - EUS: Size, growth, solid component, mural nodules, appearances of IPMN
 - FNA: Dysplastic cells
- Detect mucinous (pre-malignant)
 - EUS: Poor discriminator
 - FNA: CEA, CA19-9, mucin

Cystic lesions – local figures



Example: cystic lesion

CEA < 1ng/ml
No mucin
Amylase < 10
↓
Discharged



Conclusion

EUS FNA of the pancreas is:

- Feasible
- Safe
- Sensitive
- Useful
 - Confirm diagnosis
 - Upstage; reduce unnecessary surgery
 - Demonstrate mucinous (pre-malignant) aetiology