

# Evaluation and Management of Pancreatic Cysts

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No conflicts of interest

# Agenda

Why are we talking about pancreatic cysts?

What are the different types of pancreatic cysts?

How do we differentiate between them?

What are the management strategies?



# Why are we talking about pancreatic cysts?



# The “Why”

- ❖ They are relatively common
- ❖ They can be difficult to distinguish
- ❖ Some have a malignant potential
- ❖ Surgical resection may be morbid

# What are the different types of pancreatic cysts?

# Pancreatic Cystic Lesions

Lymphoepithelial  
cysts

Pancreatic  
pseudocyst

Serous  
cystadenoma  
(SCA)

Acinar cell  
cystadenoma

Mucinous cystic  
neoplasm (MCN)

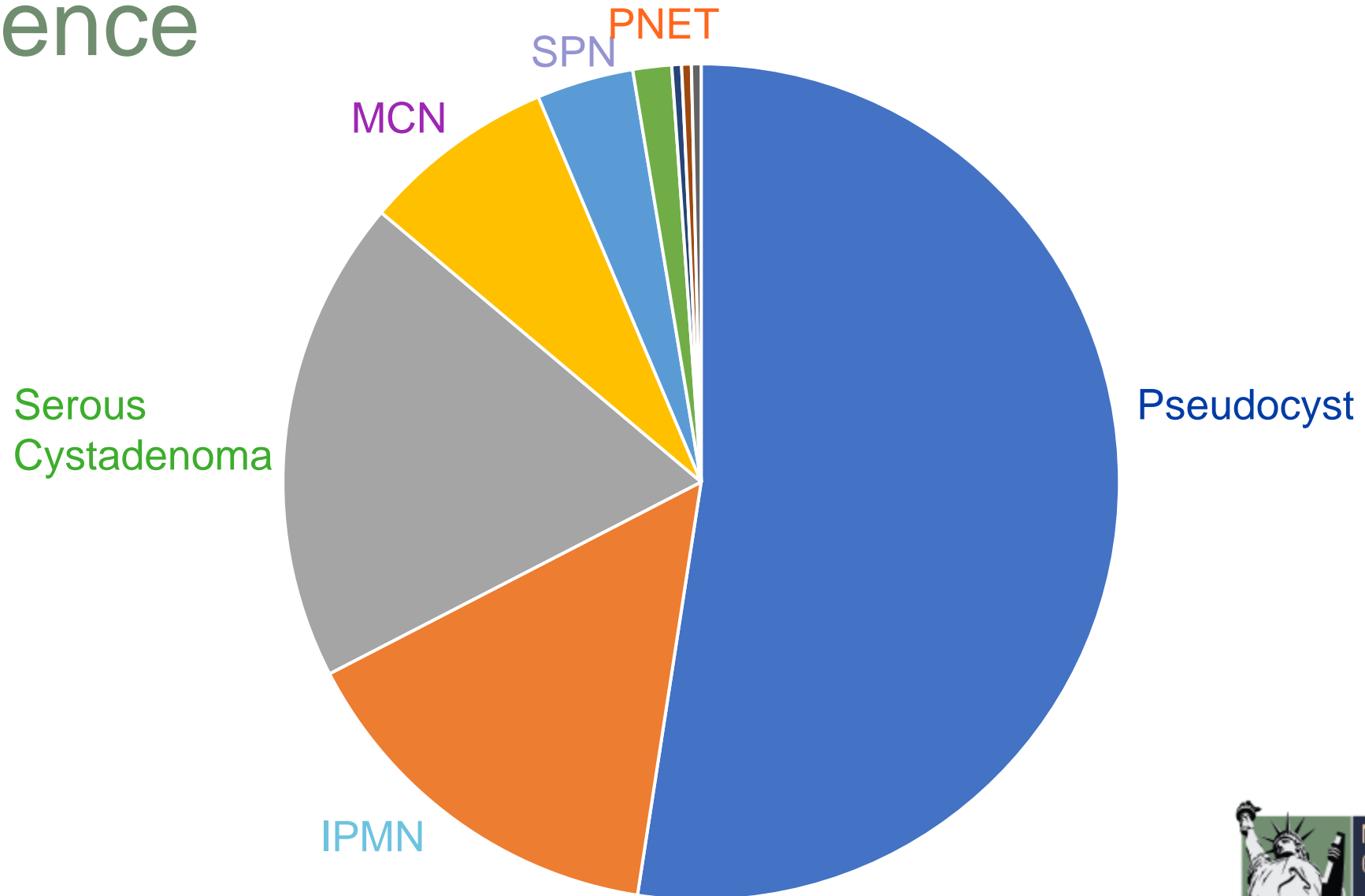
Intraductal  
papillary  
mucinous  
neoplasm (IPMN)

Intraductal  
tubulopapillary  
neoplasm (ITPN)

Solid  
pseudopapillary  
neoplasm (SPN)

Pancreatic  
neuroendocrine  
tumor (PNET)

# Incidence





# Epidemiologic Features

Cyst Type	Gender (Female %)	Age (decade)	Location (body-tail %)	Malignancy rate (%)
<b>Pseudocyst</b>	50	4 – 5	50	0
<b>SCA</b>	70	6 – 7	50	<1
<b>IPMN - BD</b>	55	6 – 7	<30	Variable, up to 20
<b>IPMN - MD</b>	55	6 – 7	n/a	70
<b>MCN</b>	>95	4 – 5	95	20
<b>SPT</b>	80	2 – 3	>50	15
<b>PNET</b>	45	6 – 7	>50	Variable, up to 30



How do we differentiate  
between the different types  
of pancreatic cysts?



# Imaging Studies

CT

- Accuracy in identifying a specific diagnosis: 39-61%

MRI

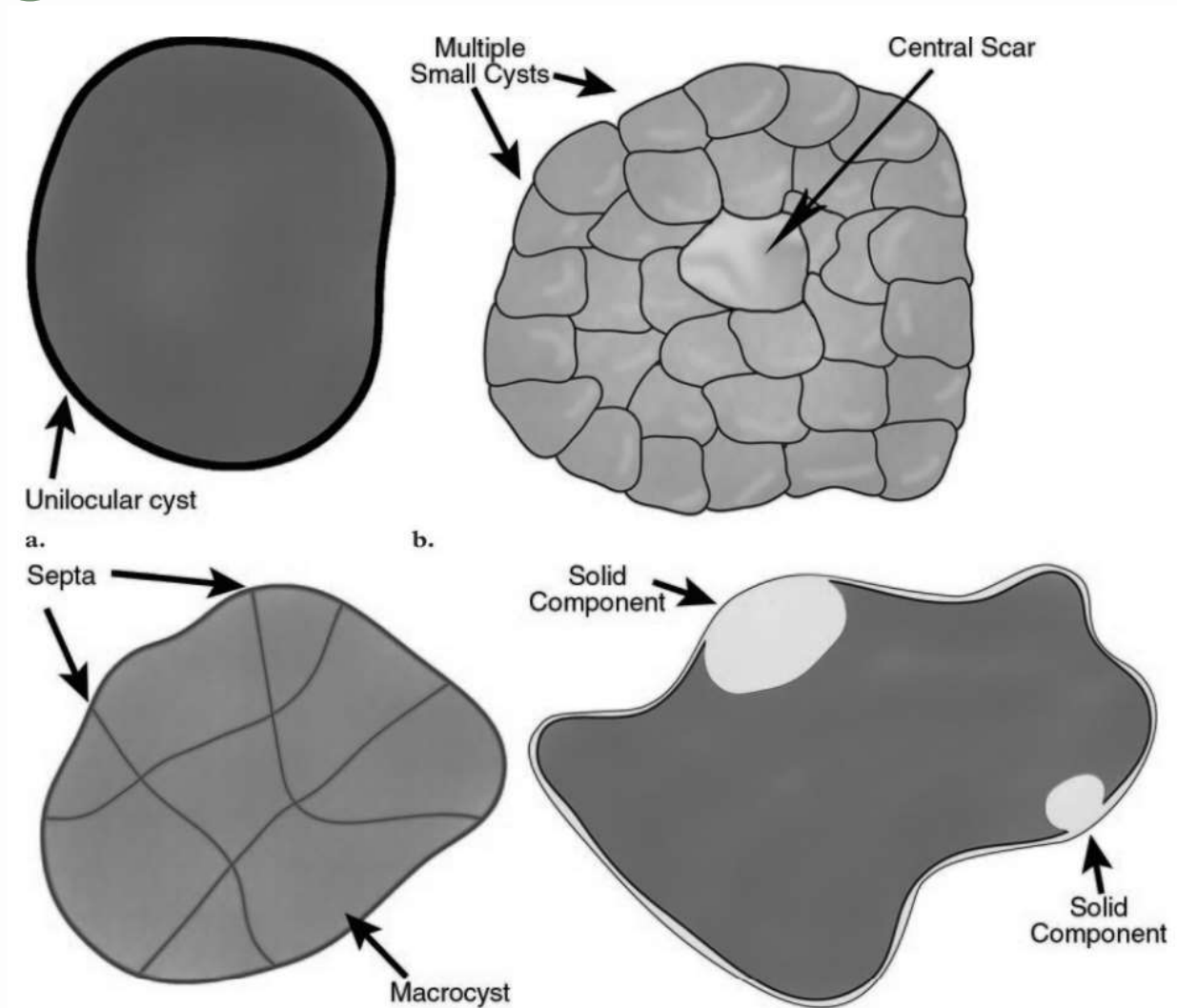
- Accuracy in identifying a specific diagnosis: 50-86%
- Better than CT at identifying septations/mural nodules/ductal communication

EUS

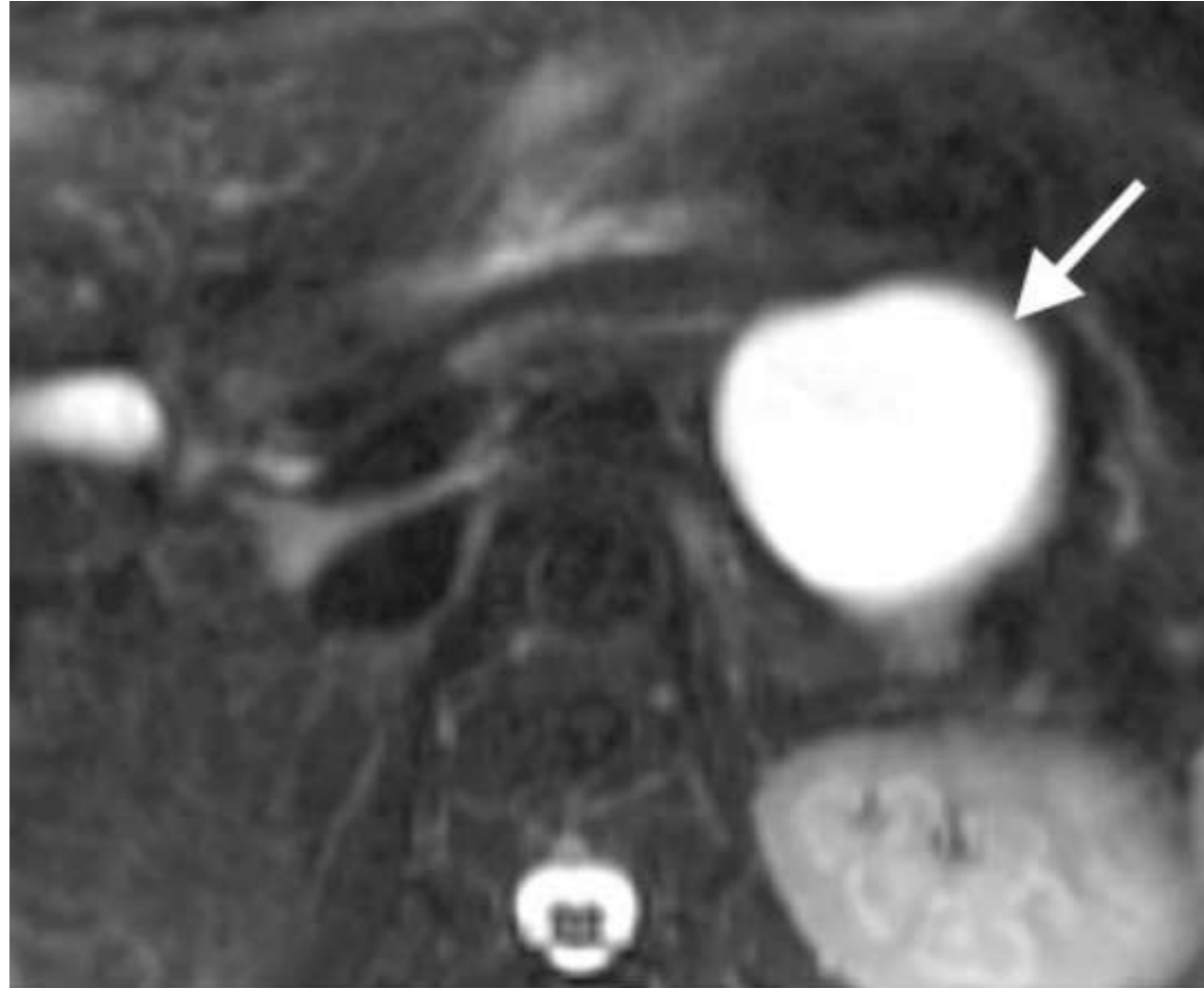
- Accuracy of detection PCN is 81%
- Significantly increased compared to both MRI/MRCP and CT



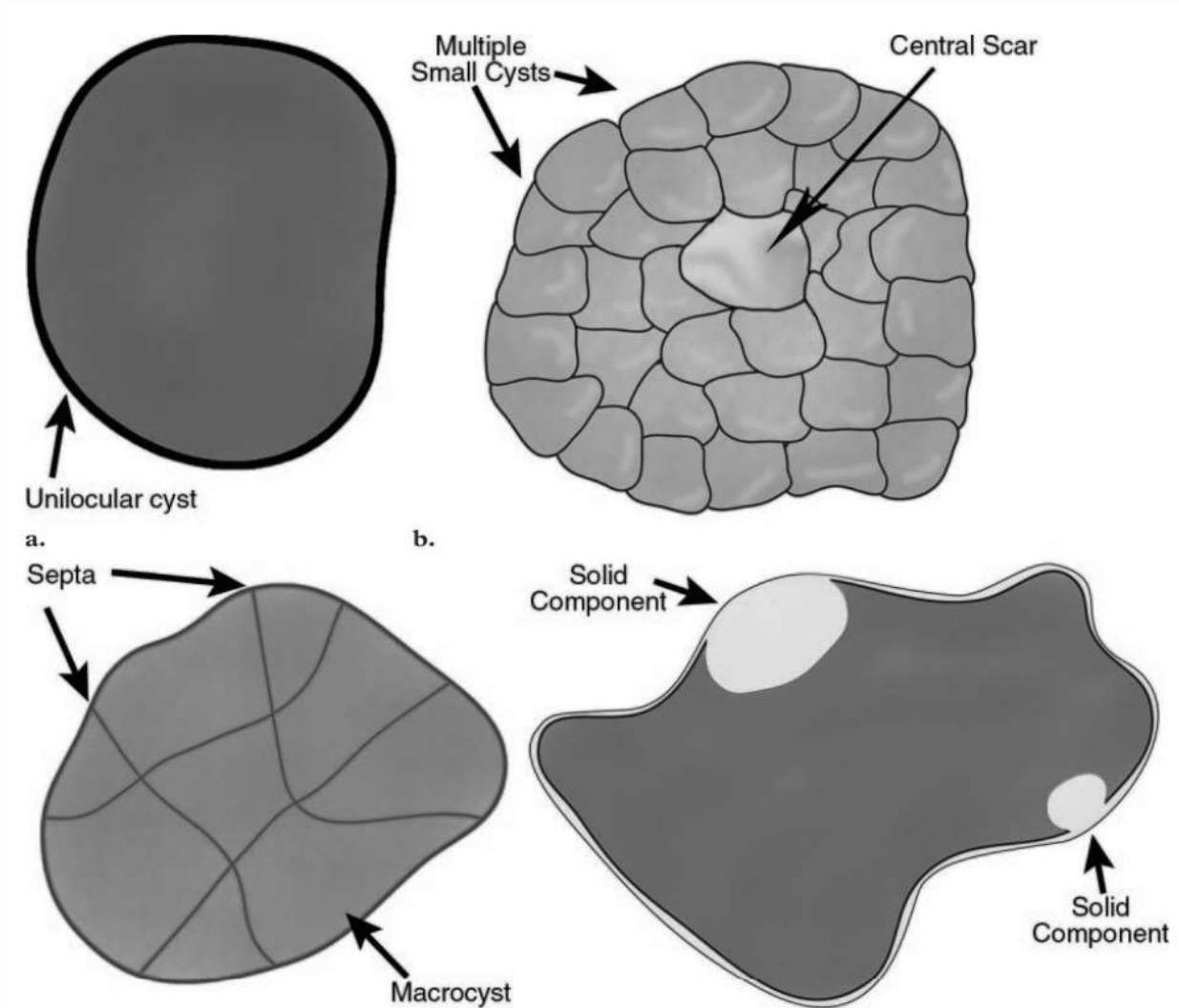
# Morphologic Appearance



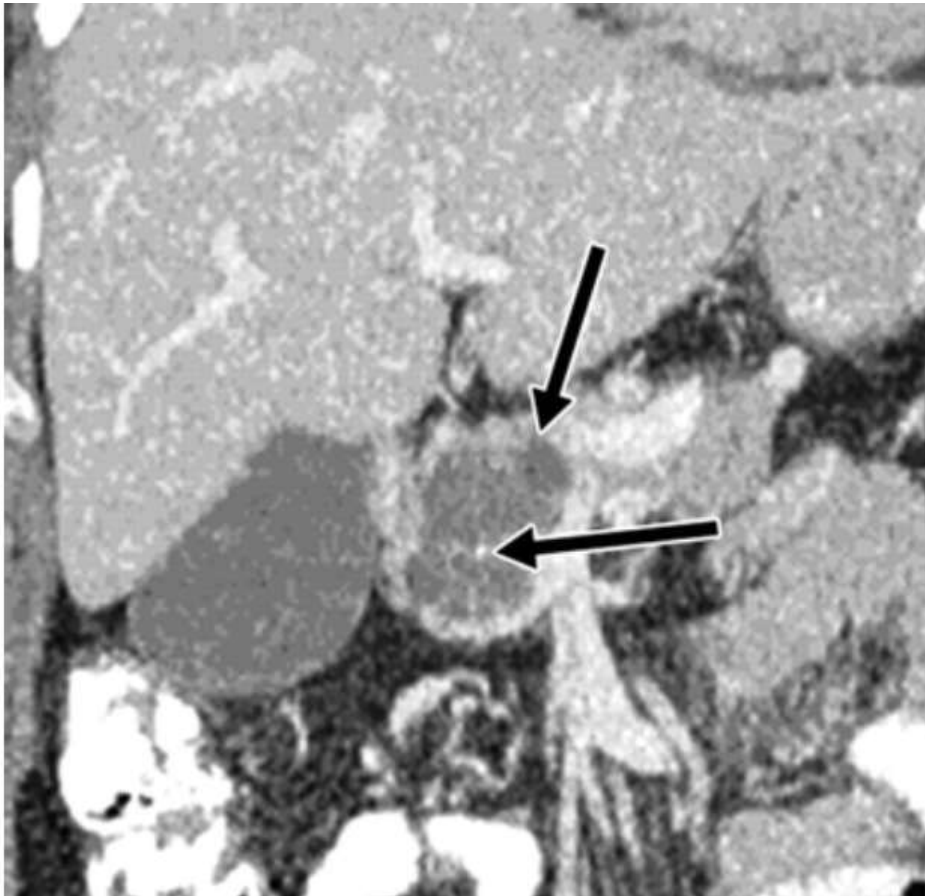
# Radiologic Appearance



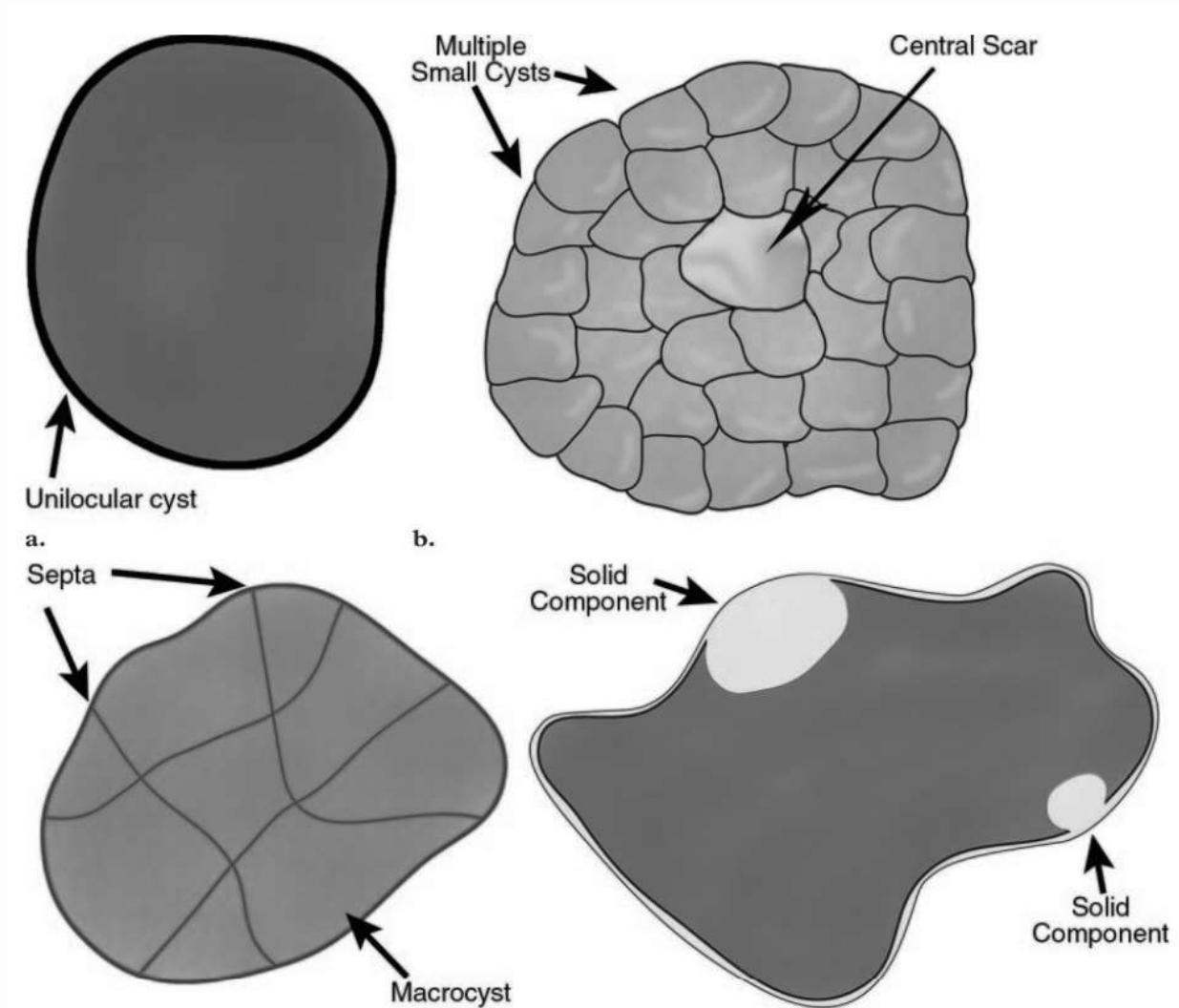
# Morphologic Appearance



# Radiologic Appearance

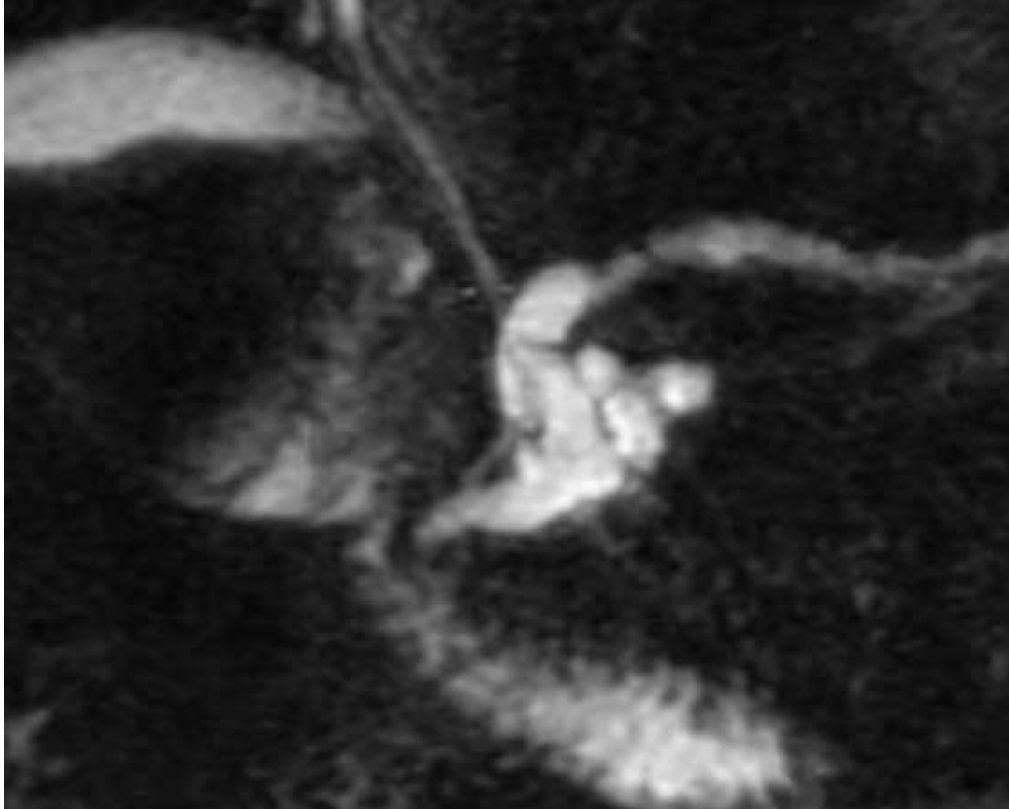


# Morphologic Appearance

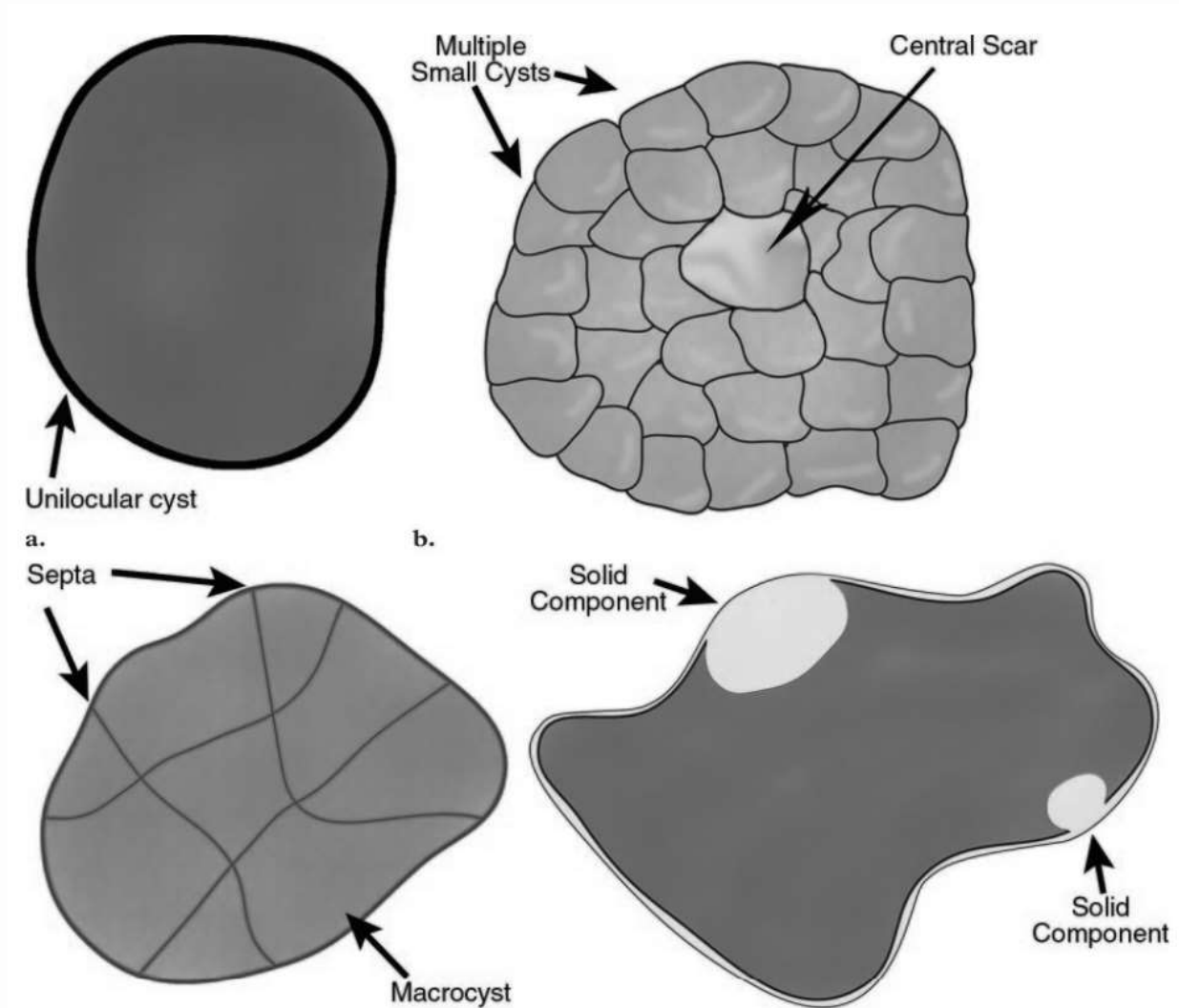




# Radiographic Appearance



# Morphologic Appearance



# Radiologic Appearance



# Cyst Fluid Analysis

Cyst Type	Fluid Appearance	CEA	Amylase	Cytology
Pseudocyst	Thin, brown, sediment	Low	High	Inflammatory cells
SCA	Thin, bloody	Low	Low	Cuboidal cells with cytoplasmic glycogen
IPMN	Thick, clear	High	High	Mucin containing columnar cells with variable atypia
MCN	Thick, clear	High	Low	Mucin containing columnar cells with variable atypia, +ovarian type stroma
SPT	Often bloody	n/a	n/a	Branching papillae with myxoid stroma, IHC+ B-catenin
PNET	Thin, clear	Low	Low	Plasmacytoid cells with oval nuclei, IHC+ synaptophysin, chromogranin

# Additional Cyst Fluid Studies?

## Glucose

- <50mg/dL associated with mucinous cysts
- Pooled sensitivity, specificity, accuracy of 91%, 86%, and 94%
- Higher sensitivity and accuracy than CEA

## KRAS + GNAS

- KRAS mutations highly specific for mucinous cysts
- GNAS mutations highly specific for IPMN
- Higher diagnostic accuracy than CEA

## Other Mutations

- VHL - associated with SCA
- CTNNB1 – associated with SPN
- SMAD4 - associated with MCN
- Increased frequency of mutant alleles of TP53, PIK3CA, and PTEN – associated with IPMN with high grade dysplasia and neoplasia



# How do we manage pancreatic cysts?

# Guidelines

CME

## ACG Clinical Guideline: Diagnosis and Management of

Gastroenterology 2015;148:819-822

uer, MD, MSc, FACC (GRADE Methodologist)<sup>7</sup> and

### AGA SECTION

### American Gastroenterological Association Institute Guideline on the Diagnosis and Management of Asymptomatic Pancreatic Cysts



Santhi Swaroop Vege,<sup>1</sup> Barry Ziring,<sup>2</sup> Rajeev Jain,<sup>3</sup> Pau  
Guidelines Committee

Guidelines



OPEN ACCESS

ORIGINAL ARTICLE

CLINICAL PRACTICE MANAGEMENT

### European evidence-based guidelines on pancreatic cystic neoplasms

stic Tumours of the Pancreas

### Management of Incidental Pancreatic Cysts: A White Paper of the ACR Incidental Findings Committee

SA-CME

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Dushyant V. Sahani, MD<sup>e</sup>, Elliot Newman, MD<sup>f</sup>, William R. Brugge, MD<sup>g</sup>, Lincoln L. Berland, MD<sup>c</sup>,  
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# Guidelines

Pancreatology 17 (2017) 738–753

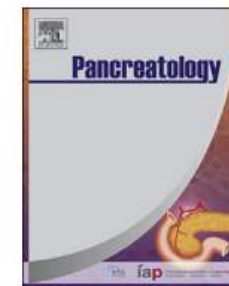


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## Pancreatology

journal homepage: [www.elsevier.com/locate/pan](http://www.elsevier.com/locate/pan)



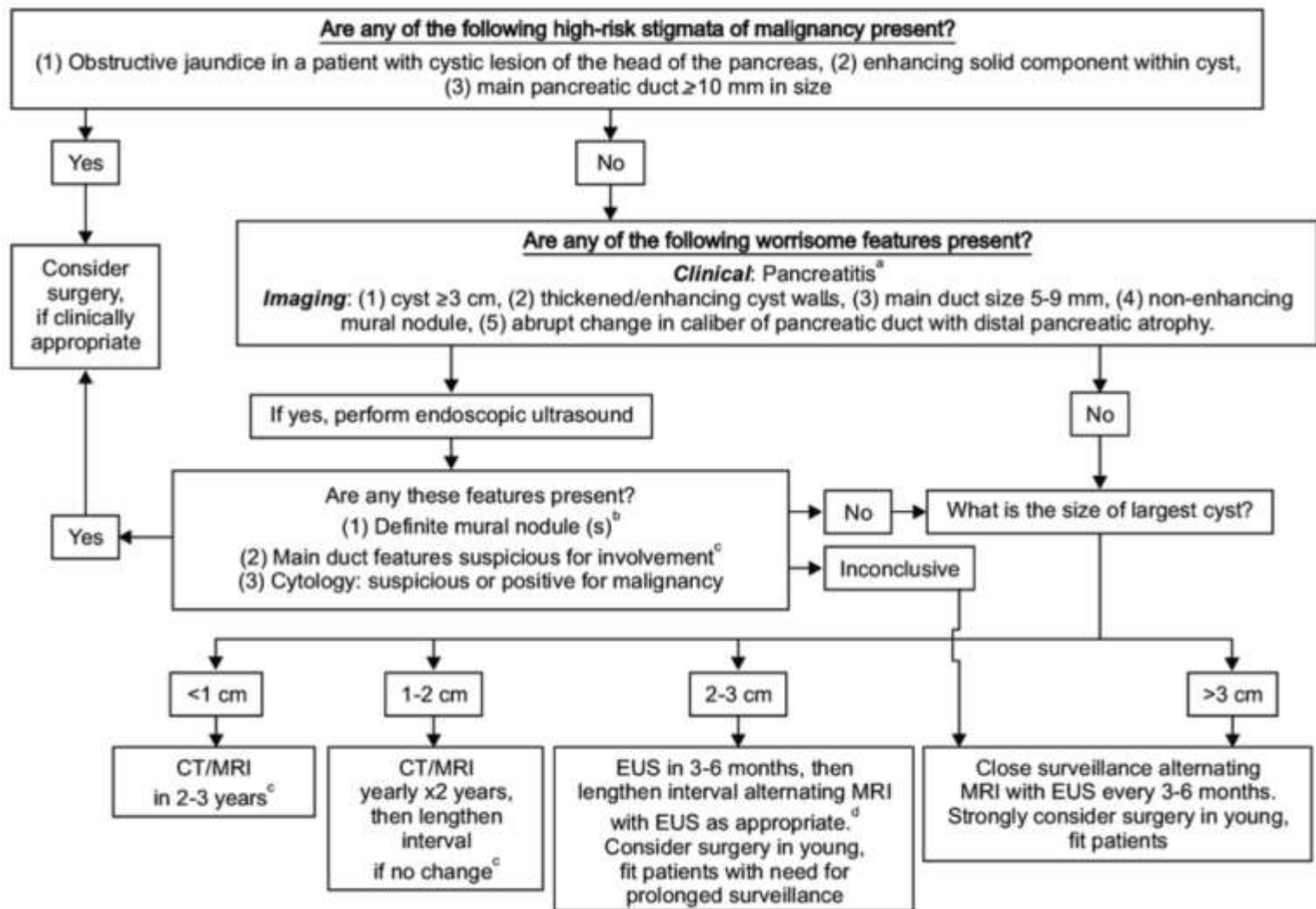
## Revisions of international consensus Fukuoka guidelines for the management of IPMN of the pancreas



Masao Tanaka <sup>a,\*</sup>, Carlos Fernández-del Castillo <sup>b</sup>, Terumi Kamisawa <sup>c</sup>, Jin Young Jang <sup>d</sup>,  
Philippe Levy <sup>e</sup>, Takao Ohtsuka <sup>f</sup>, Roberto Salvia <sup>g</sup>, Yasuhiro Shimizu <sup>h</sup>, Minoru Tada <sup>i</sup>,  
Christopher L. Wolfgang <sup>j</sup>



# Fukuoka Guidelines



# Simplified Approach to Management

**BENIGN?**

**Benign Features**  
Clinical History  
Pathognomonic  
radiographic features  
Pathognomonic cytology

Follow clinically

**INTERMEDIATE?**

**Worrisome Features**  
Small mural nodule  
Thickened walls  
Main duct dilation <10mm  
*Mucinous on fluid analysis*

Size <2cm

Size >2cm

CT/MRI  
q1-2 yrs

EUS/MRI  
q3-6 mos

**MALIGNANT?**

**High Risk Features**  
Symptomatic  
Obstructive jaundice  
High serum tumor markers  
Solid component (>5mm)  
Main duct involvement  
Change in duct caliber with  
distal atrophy  
Positive cytology  
*High MAF?*

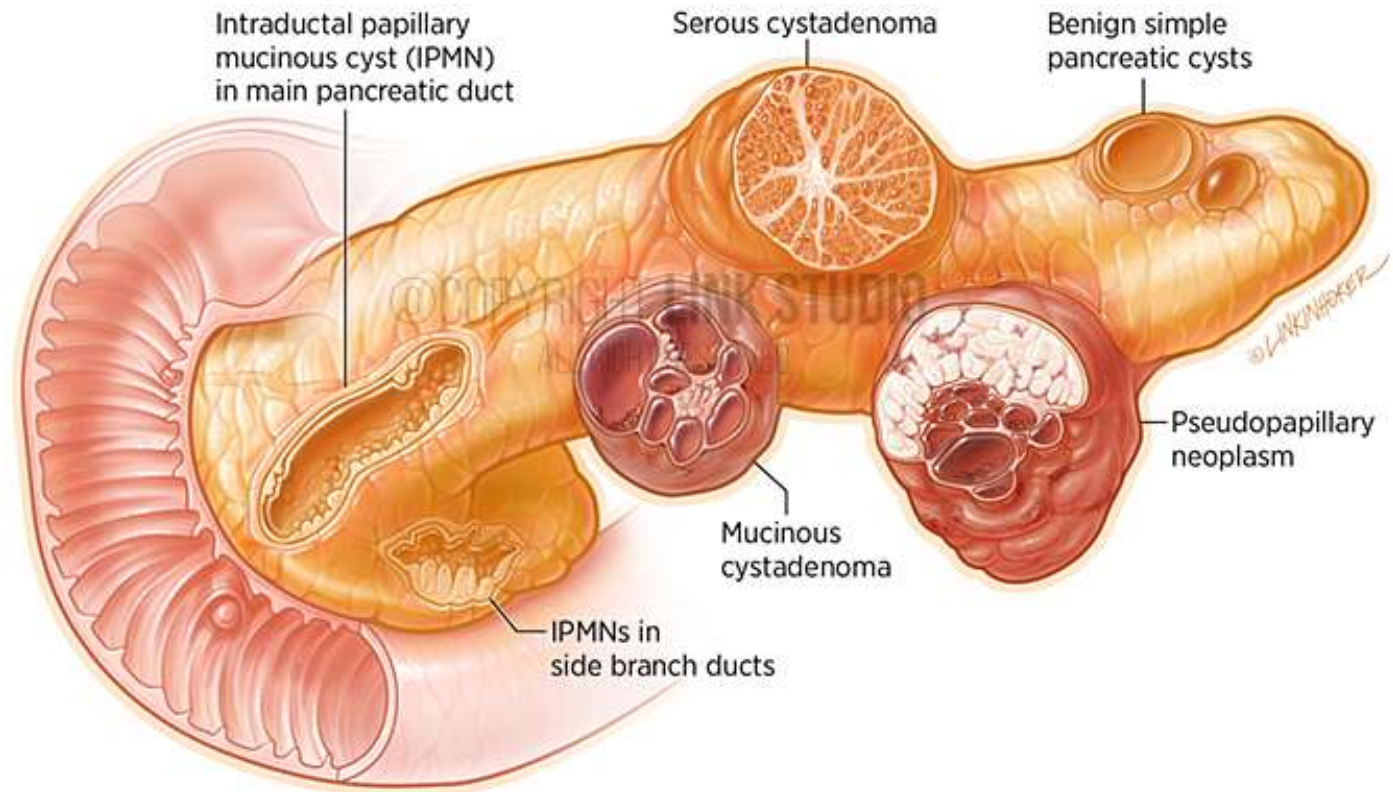
EUS/FNA  
Surgery

# Simplified Approach to Management

Consider referral to multi-disciplinary group for further individualized management and enrollment in surveillance program and research studies



Thank you for listening!



<https://linkstudio.info/portfolio/pancreatic-cysts/>



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