



Surgical internal drainage of cystic lesions



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Pancreatic fluid collections

Term	Definition
Peripancreatic fluid collection	A collection of enzyme-rich pancreatic juice that occurs early in the course of acute pancreatitis, or that forms after a pancreatic duct leak; located in or near the pancreas; it lacks a well-organized wall of granulation or fibrous tissue
Early pancreatic (sterile) necrosis	A focal or diffuse area of nonviable pancreatic parenchyma, typically occupying >30% of the gland and containing liquefied debris and fluid
Late pancreatic (sterile) necrosis	An organized collection of sterile necrotic debris and fluid with a well-defined margin or wall within the normal domain of the pancreas
Acute pseudocyst	A collection of pancreatic juice enclosed within a perimeter of early granulation tissue, usually as a consequence of acute pancreatitis that has occurred within the preceding 3–4 wk
Chronic pseudocyst	A collection of pancreatic fluid surrounded by a wall of normal granulation and fibrous tissue, usually persisting for >6 wk
Pancreatic abscess	Any of the above in which gross purulence (pus) is present, with bacterial or fungal organisms documented to be present

Table 30.1 D'Egidio and Schein classification of pancreatic pseudocysts.

	Type I	Type II	Type III
Occurrence	Acute pancreatitis	Acute or chronic	Chronic pancreatitis
Pancreatic duct	Normal	Diseased without stricture	Strictured
Pseudocyst communication	No	No	Yes

Cystic pancreatic lesions

Table 2 Differential diagnosis of cystic pancreatic lesions

	SCA	MCN	IPMN	SPN	Pseudocyst
Prevalent age	Middle age	Middle age	Elderly	Young	Variable
Sex	Mostly female	Mostly female	Male > female	Mostly female	Male > female
Presentation	Mass/pain	Mass/pain	Pancreatitis	Mass/pain	Pain
Location	Evenly	Body/tail	Head	Evenly	Evenly
Malignant potential	Very low	Moderate to high	Low to high	Low	None

SCA: Serous cystadenoma; MCN: Mucinous cystic neoplasm; IPMN: Intraductal papillary mucinous neoplasia; SPN: Solid pseudopapillary neoplasm.

Cystic pancreatic lesions

Table 3 Cystic fluid analysis in cystic pancreatic diseases

	SCA	MCN	MCAC	Pseudocyst
CEA	Low	High	High	Low
CA125	Variable	Variable	High	Low
CA19-9	Variable	Variable-high	Variable-high	Variable
Amylase	Low-high	Low-high	Low-high	High
Lipase	Low	Low	Low	High

SCA: Serous cystadenoma; MCN: Mucinous cystic neoplasm; MCAC: Mucinous cystadenocarcinoma

Cystic pancreatic lesions

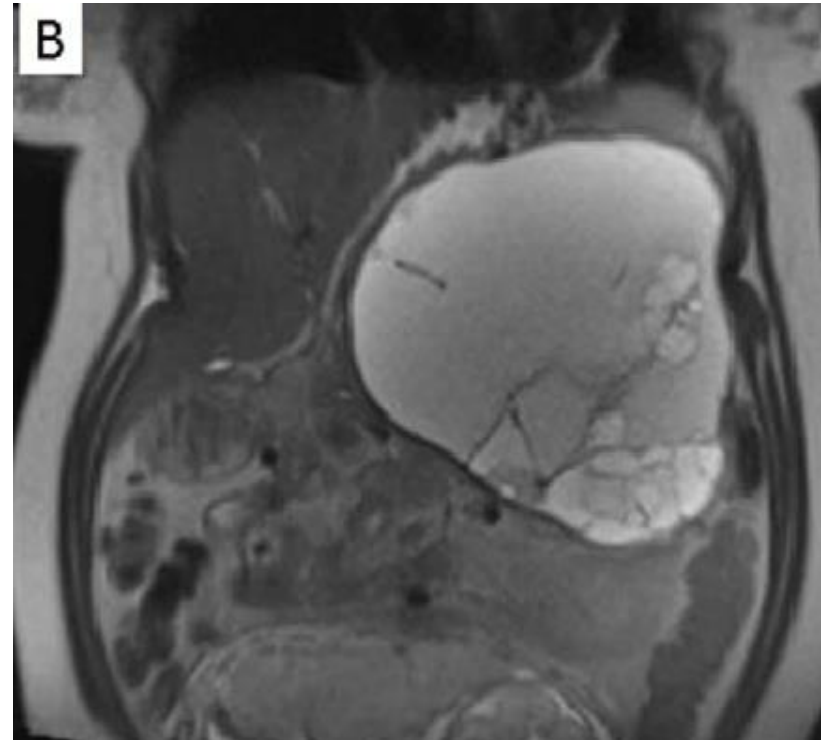
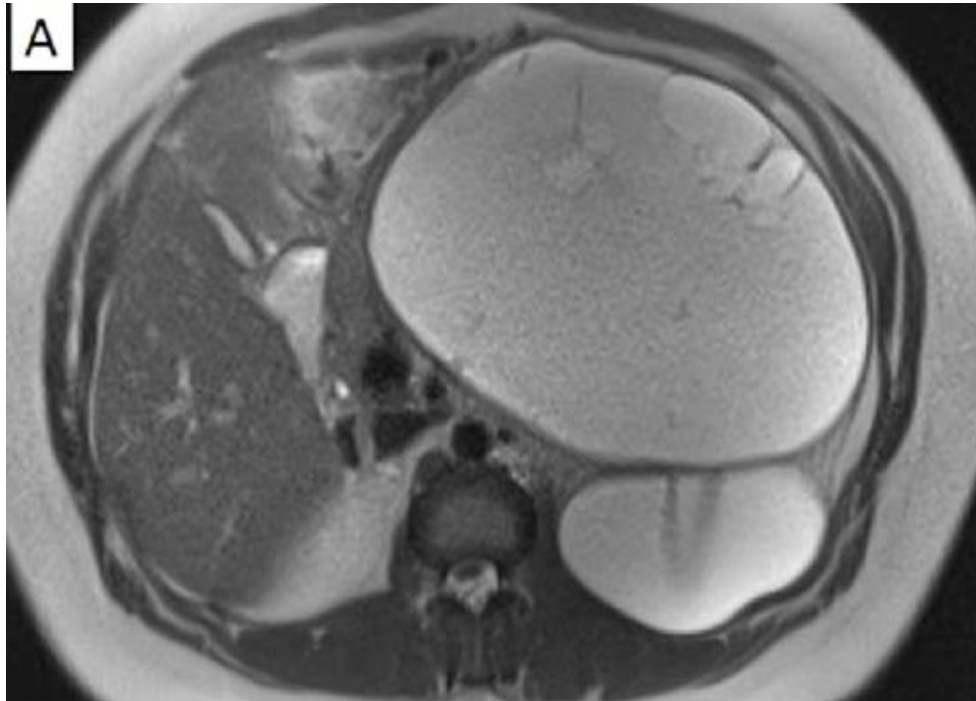
Table 2. Imaging and cyst fluid characteristics of cystic lesions of pancreas

Pancreatic cystic lesion	Imaging characteristics	Fluid analysis
Pseudocyst	Usually associated with pancreatitis Unilocular Uniform, enhancing, well-defined walls Peripancreatic inflammation May communicate with pancreatic duct	↓ Viscosity ↓ Lipase ↑ Amylase ↔/↑ CEA levels
Serous cystic lesion	Microcystic Honeycomb pattern of microlacunae Stellate scar Central calcifications – starburst appearance	↓ Viscosity ↓ CEA ↓ CA19-9 ↓ Amylase
Mucinous cystic lesion	Typically unilocular but can be multilocular Body/tail of the pancreas Macroscopic No duct communication Peripheral ‘eggshell’ calcifications	↑ Viscosity ↑ CEA ↑ CA19-9 ↓ Amylase
IPMN	Macroscopic Ductal involvement – Main duct: dilated, tortuous main pancreatic duct – Branch duct: lobulated lesion with grape-like clusters	↑ Viscosity ↑ CEA ↑ Amylase

Serous cystic neoplasm



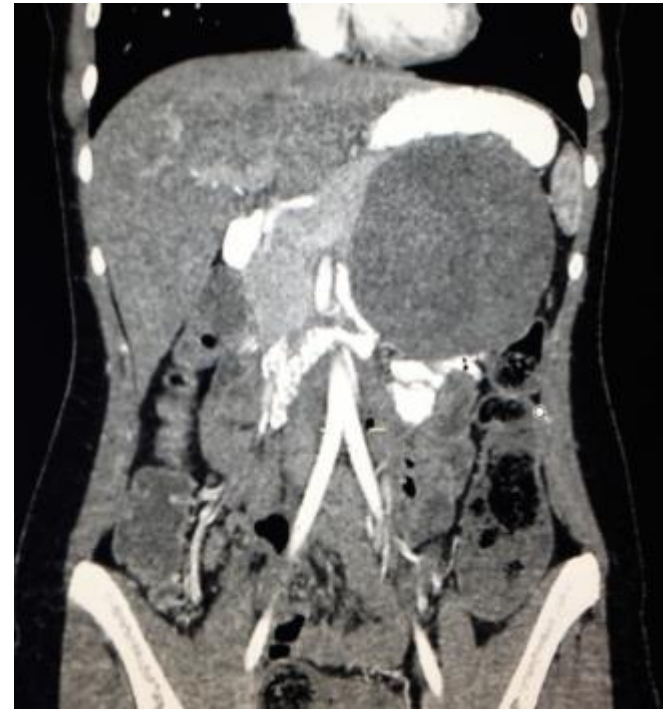
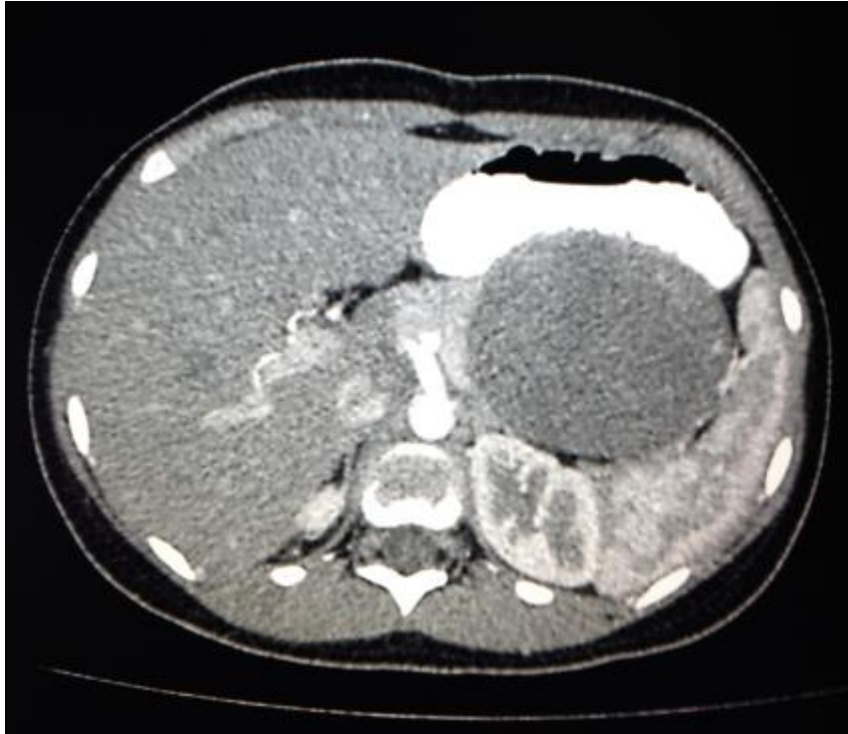
Mucinous cystic neoplasm



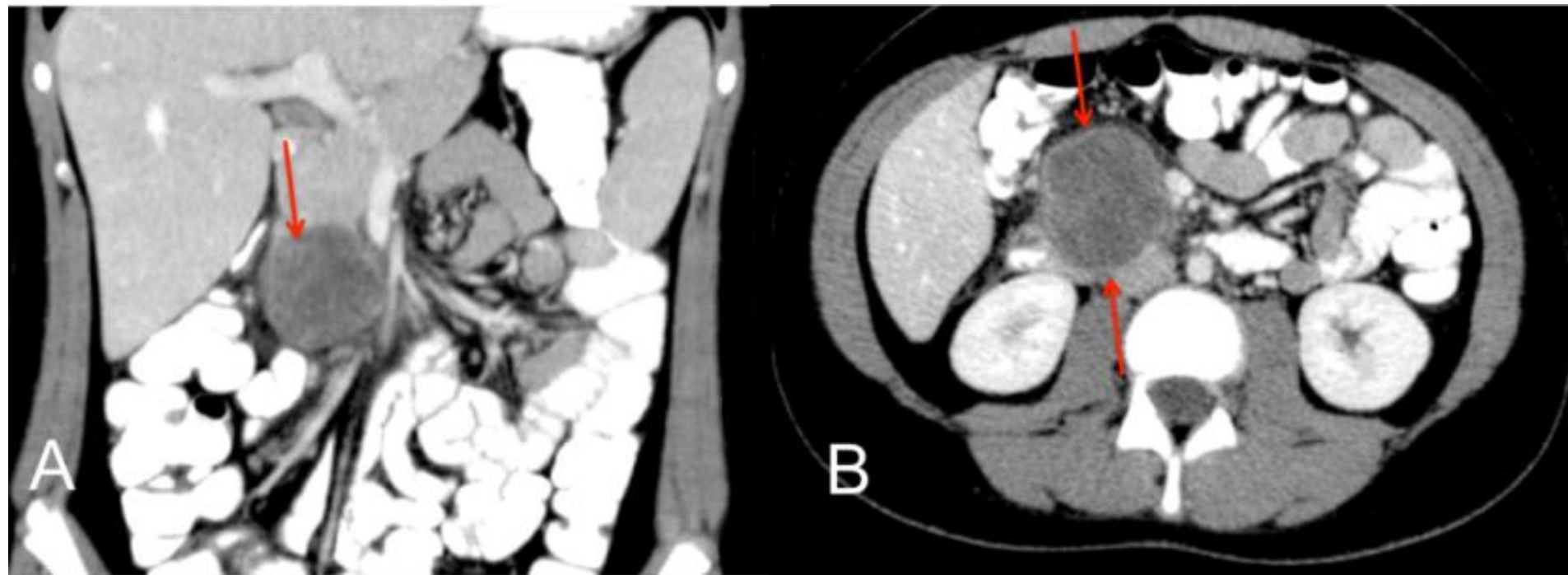
Mucinous cystic neoplasm



Pseudopapillary tumor (Frantz)



Pseudopapillary tumor (Frantz)



Pancreatic Pseudocysts

Management Options for Pancreatic Pseudocysts

Observation

Percutaneous aspiration/drainage

Endoscopic aspiration/drainage

Transpapillary endoscopic drainage or stenting

Operative approaches (open or laparoscopic)

Internal drainage

External drainage

Resection

Complications of chronic pancreatitis

Intrapancreatic complications

Pseudocysts

- Duodenal or gastric obstruction
- Thrombosis of splenic vein
- Abscess
- Perforation
- Erosion into visceral artery
- Inflammatory mass in head of pancreas
- Bile duct stenosis
- Portal vein thrombosis
- Duodenal obstruction
- Duct strictures and/or stones
- Ductal hypertension and dilatation
- Pancreatic carcinoma

Extrapancreatic complications

- Pancreatic duct leak with ascites or fistula
- Pseudocyst extension beyond lesser sac into mediastinum, retroperitoneum, lateral pericolic spaces, pelvis, or adjacent viscera

Surgical treatment of Pseudocysts

Indications

1. Clinical symptoms.
2. Complications.
3. Ductal communication.
4. Cyst enlargement.
5. Persisting cyst size of >6 cm.
6. Suspected malignancy.

Complications of Pseudocyst

Infection

Pancreatic fistulas

Gastrointestinal or urinary obstruction

Jaundice

Pseudoaneurysm formation

Pancreatic ascites

Rupture (peritonitis)

Splenic or portal vein thrombosis

Surgical internal drainage

- ❑ Confirm that lesion actually is a pseudocyst
- ❑ Radiological evaluation
- ❑ Localize the cyst
 - Head
 - Body
 - Tail

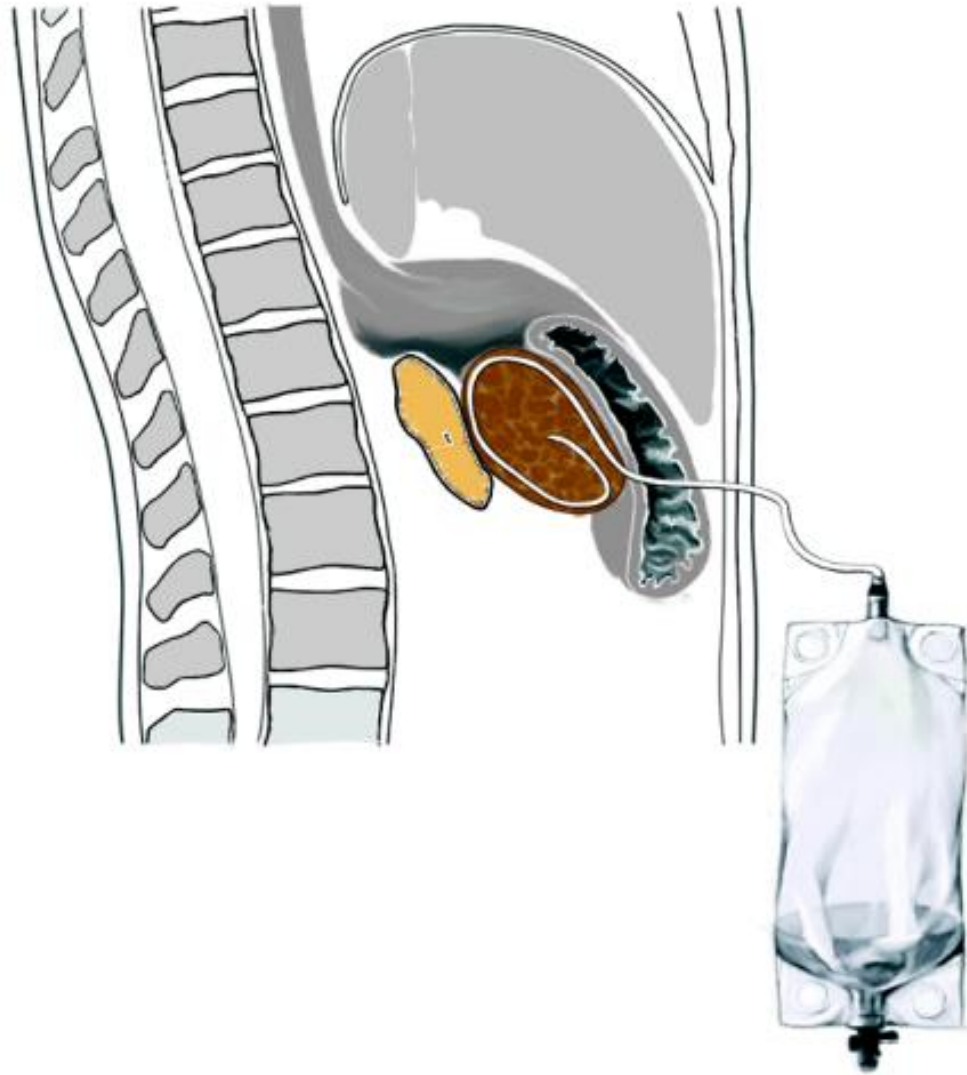
Differential Diagnosis

- ❑ Serous cystic neoplasm
- ❑ Mucinous cystic neoplasm
- ❑ Pseudopapillary tumor (Frantz)

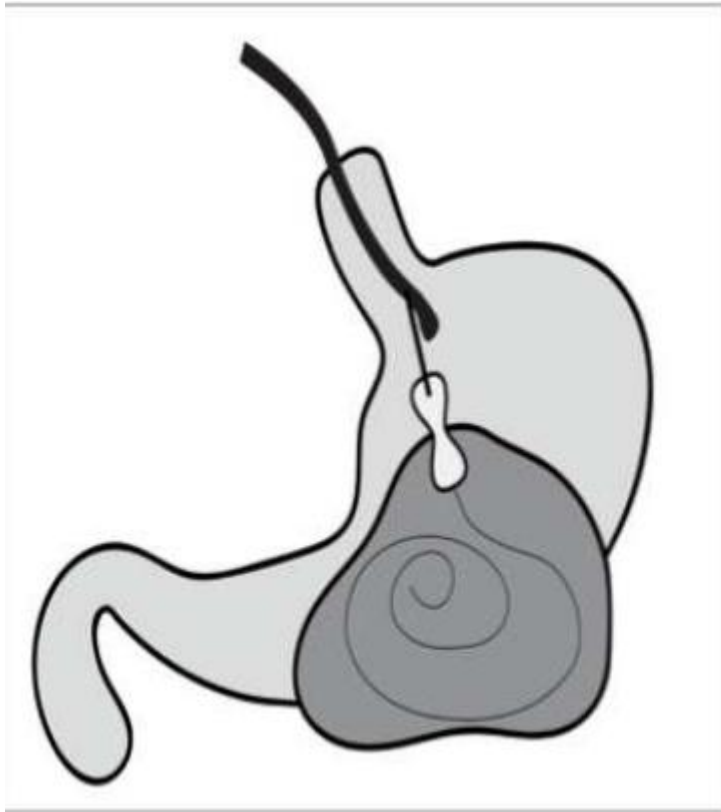
Treatment

- ❑ Percutaneous
- ❑ Endoscopic
- ❑ Surgical treatment
 - Laparotomy
 - Laparoscopy

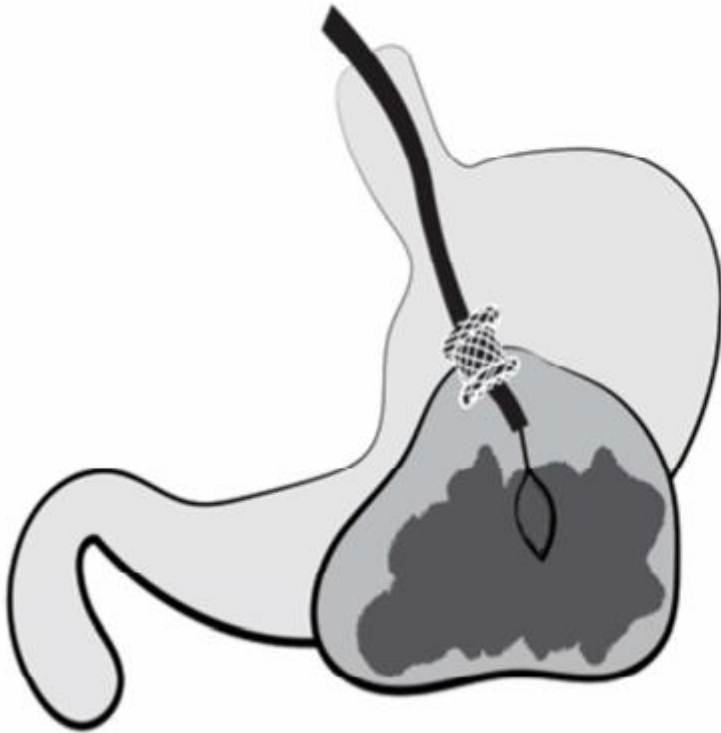
Percutaneous drainage



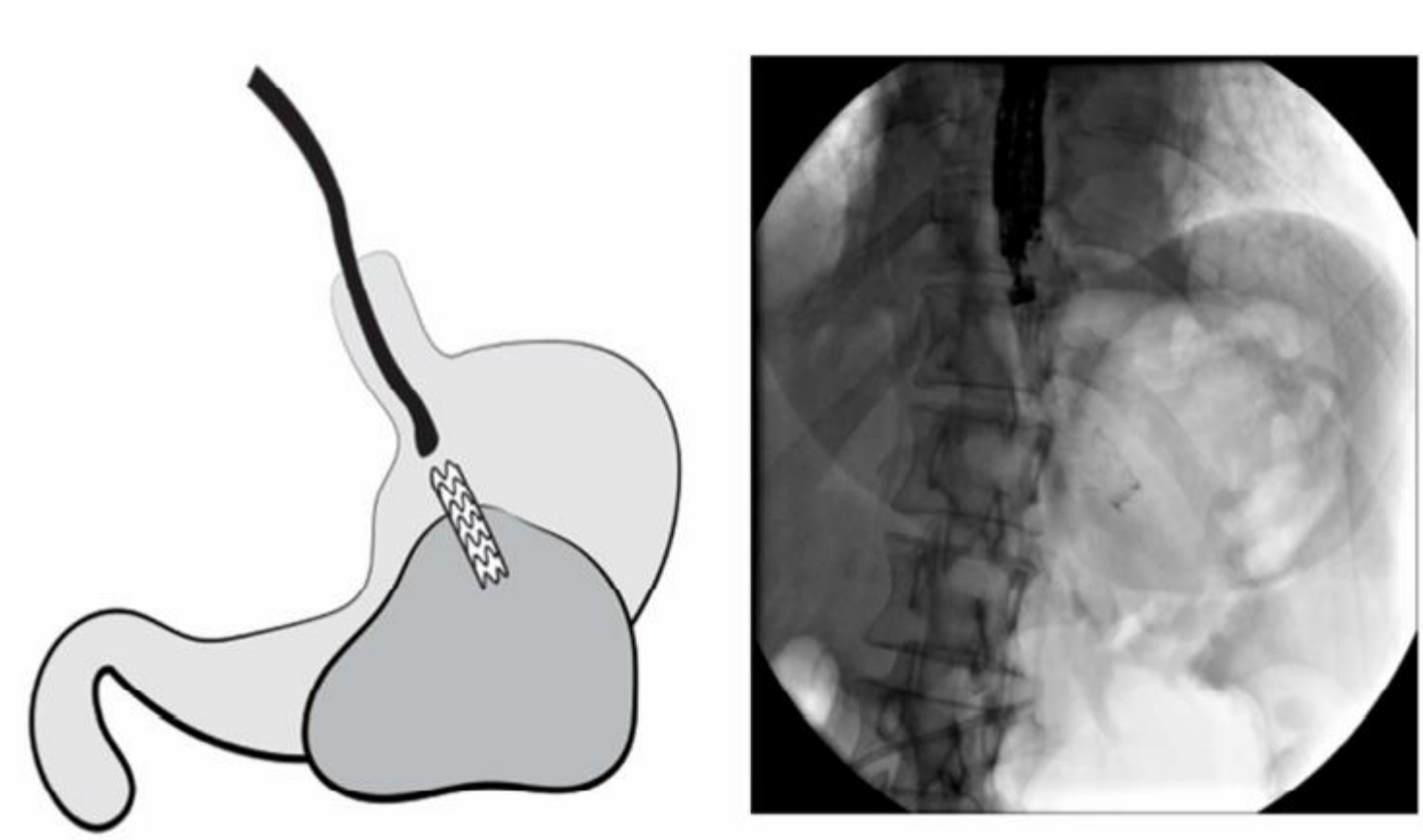
Endoscopic management

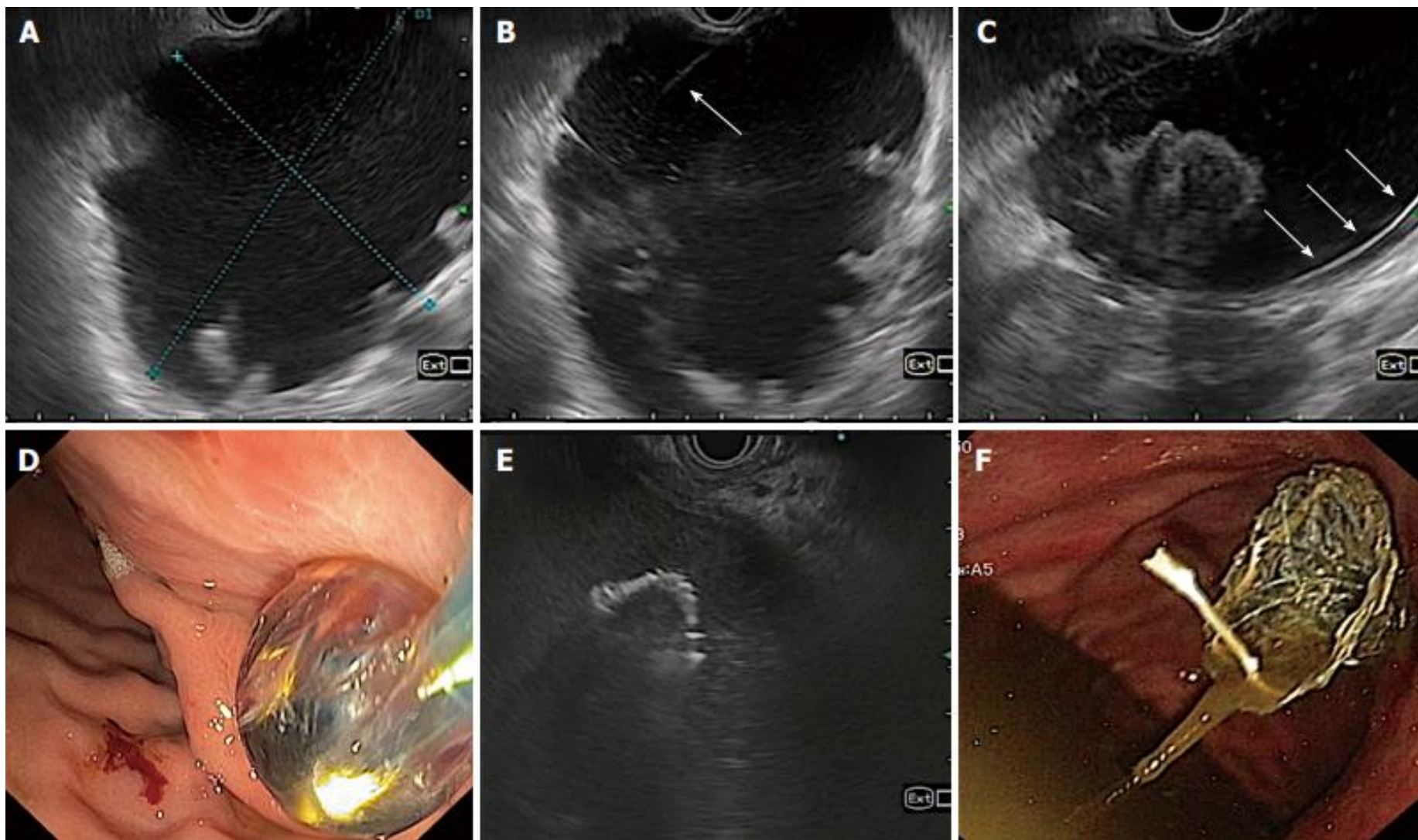


Endoscopic management



Endoscopic management





Surgical treatment of Pseudocysts

Indications

1. Ductal communication.
2. Lobulated cyst morphology.
3. Multiple pseudocysts.
4. Cyst location not accessible by other techniques.
5. Failure of interventional/endoscopic drainage.
6. Severe ductal changes (e.g., in chronic pancreatitis).
7. Suspected cystic neoplasm.

Internal drainage

- ❑ Pancreatic head
 - Duodenum
- ❑ Body
 - Stomach
 - Jejunum
- ❑ Tail
 - Jejunum
 - Distal pancreatectomy

Pancreatic Pseudocysts

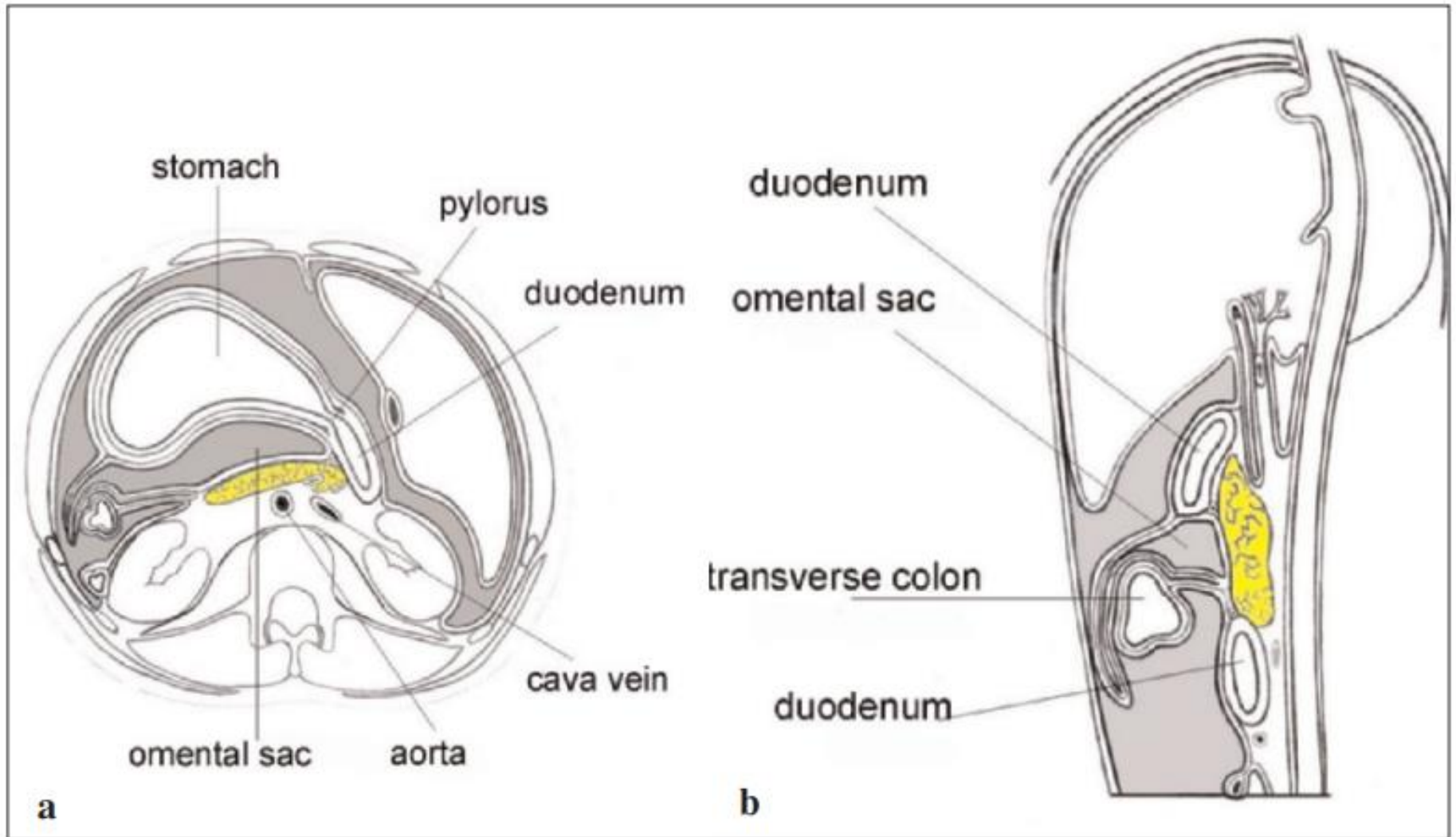


Head

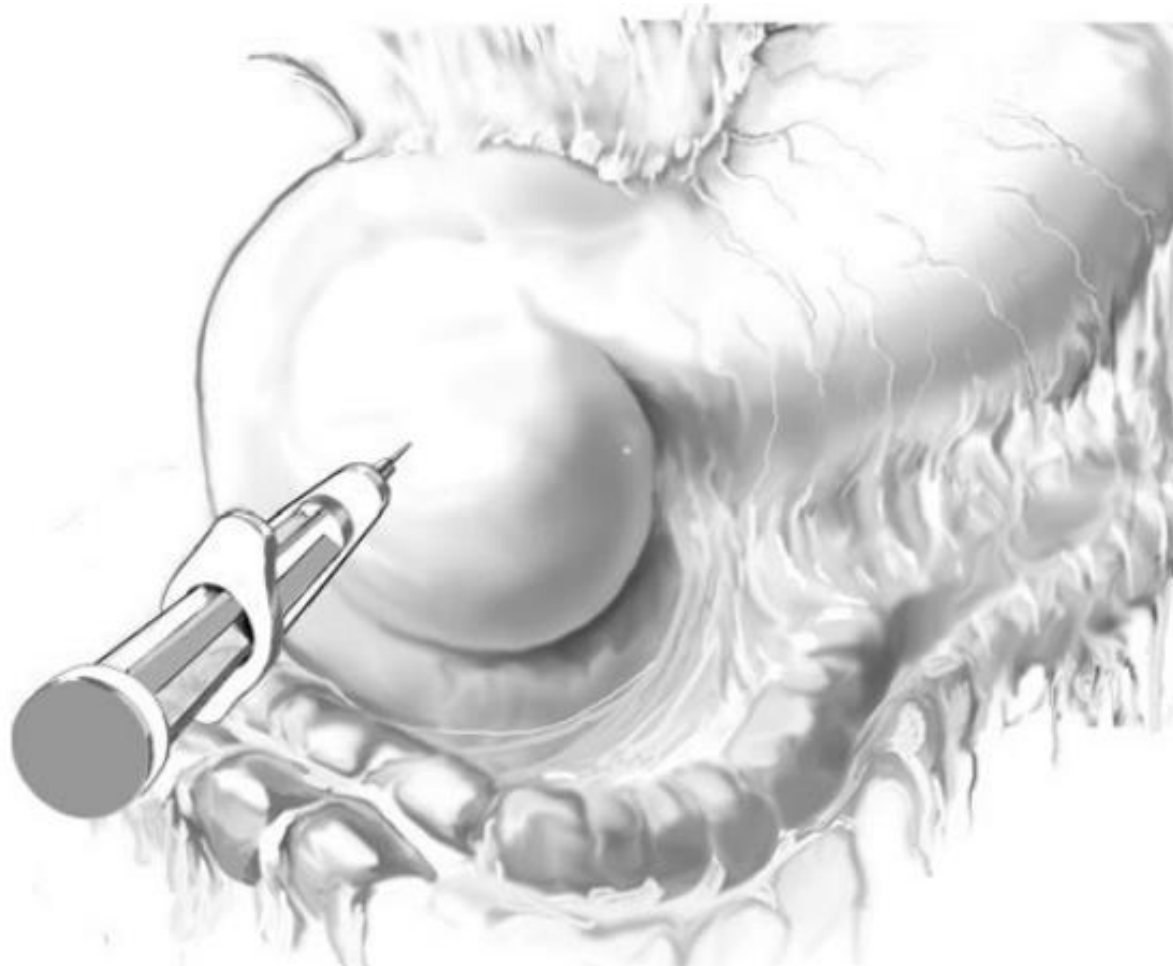


Body/Tail

□ Surgical anatomy



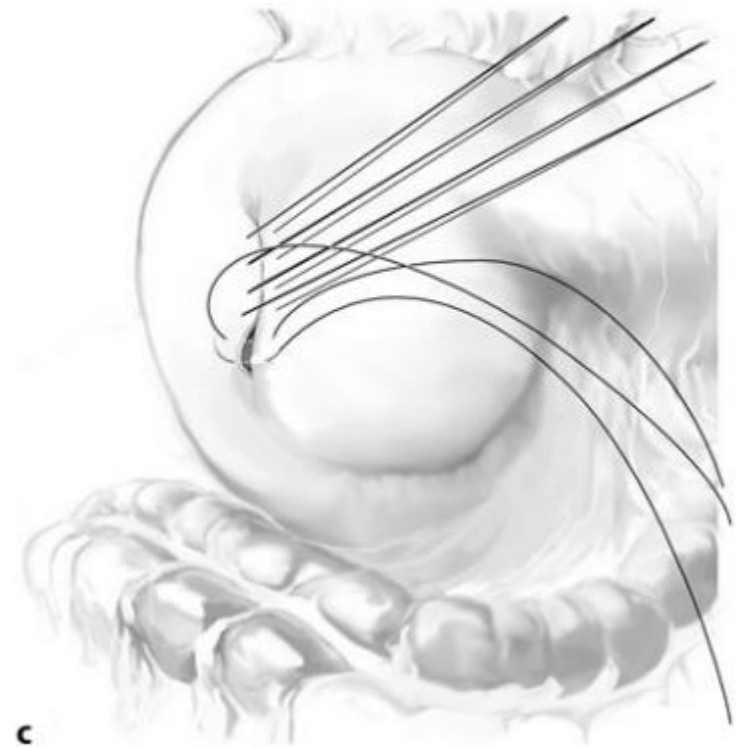
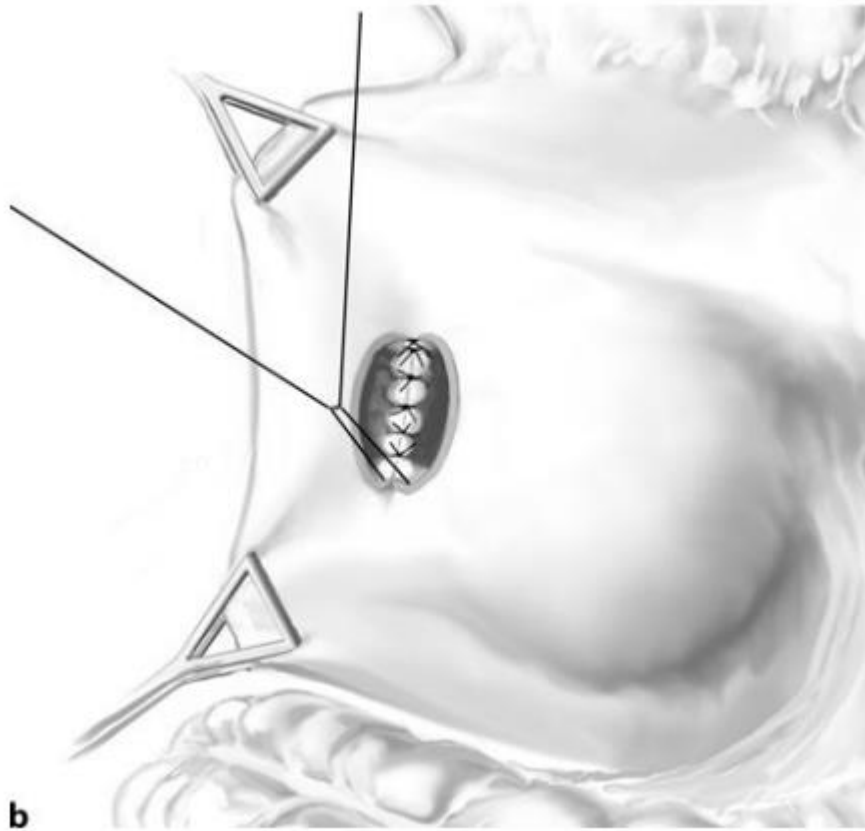
□ Pancreatic head Cystoduodenostomy



□Pancreatic head Cystoduodenostomy



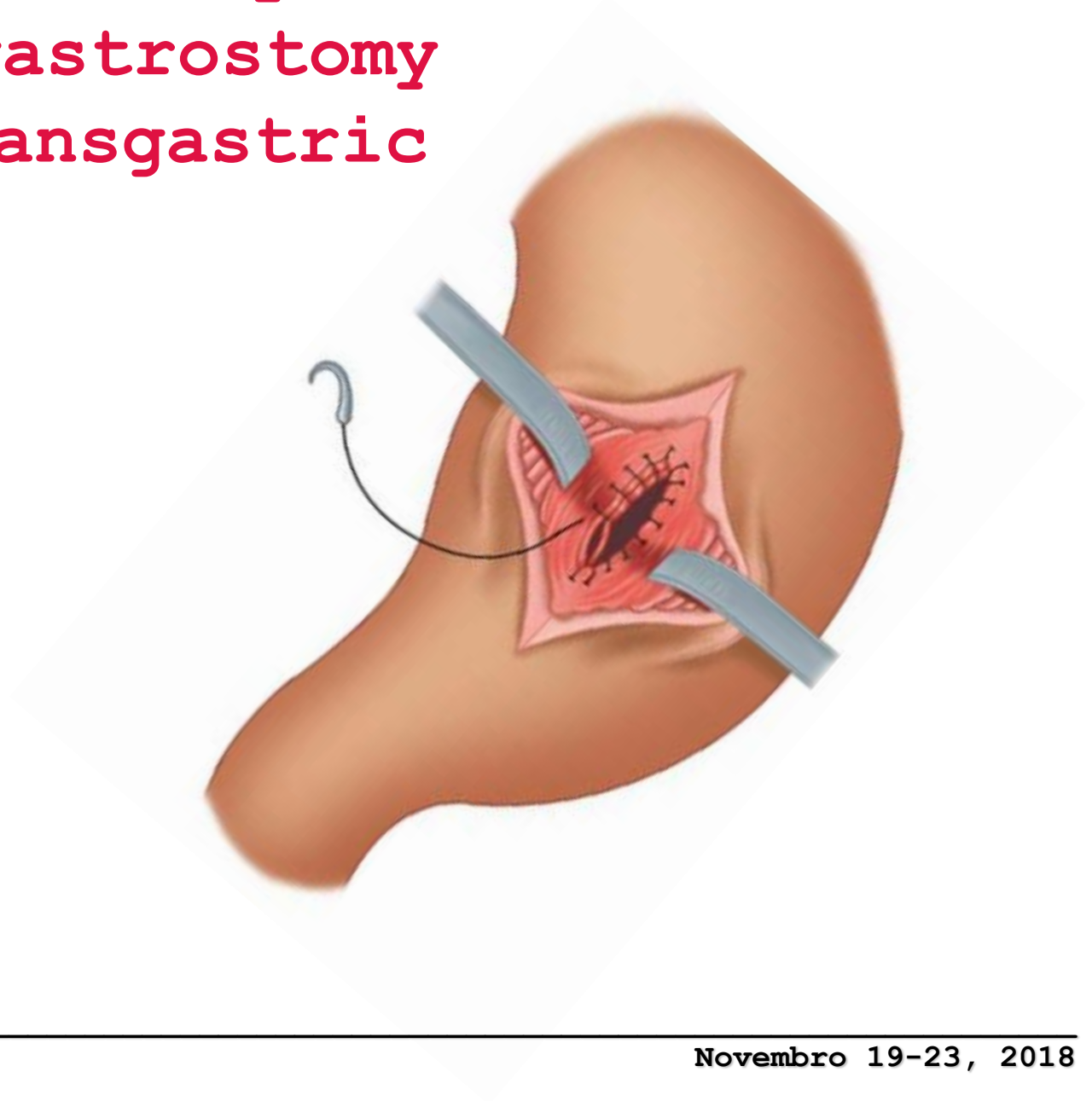
□ Pancreatic head Cystoduodenostomy



□ Pancreatic body

Cystogastrostomy

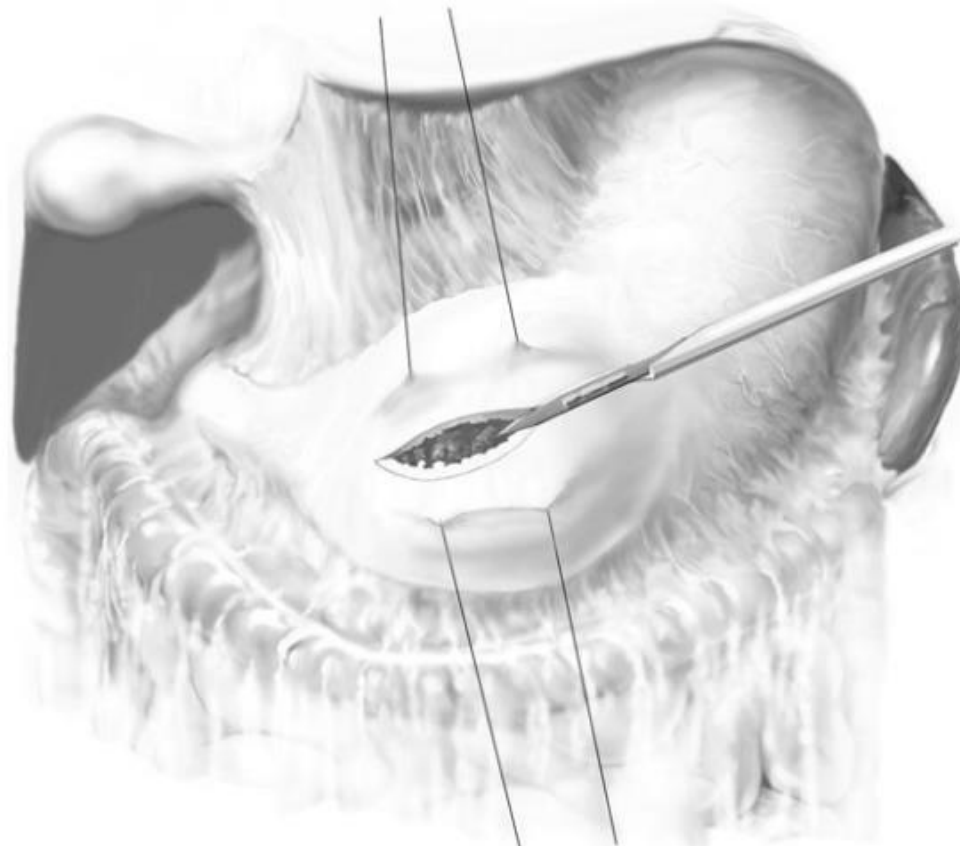
Transgastric



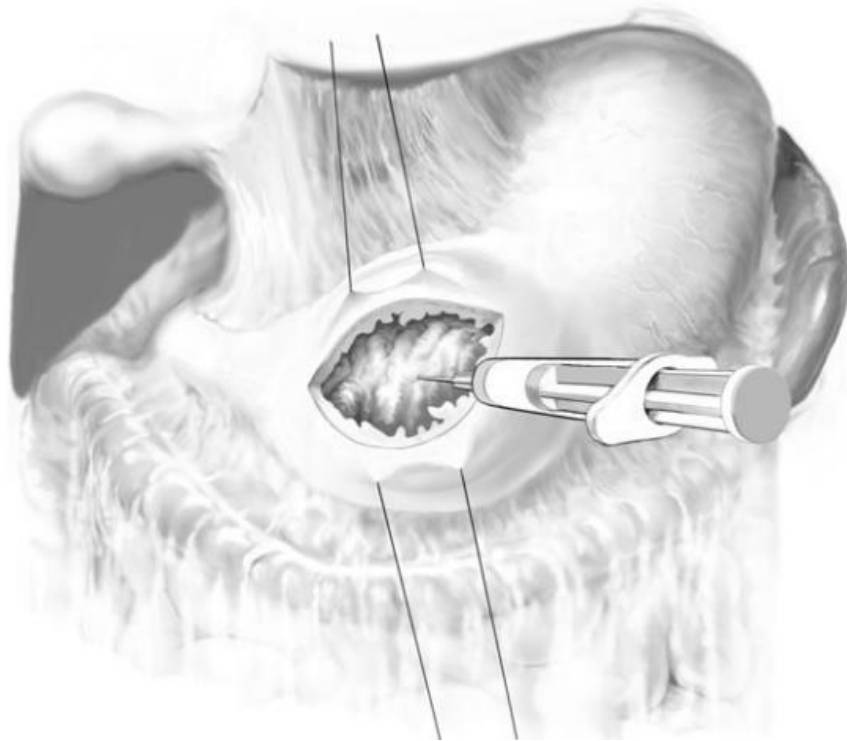
□Pancreatic body

Cystogastrostomy

Transgastric



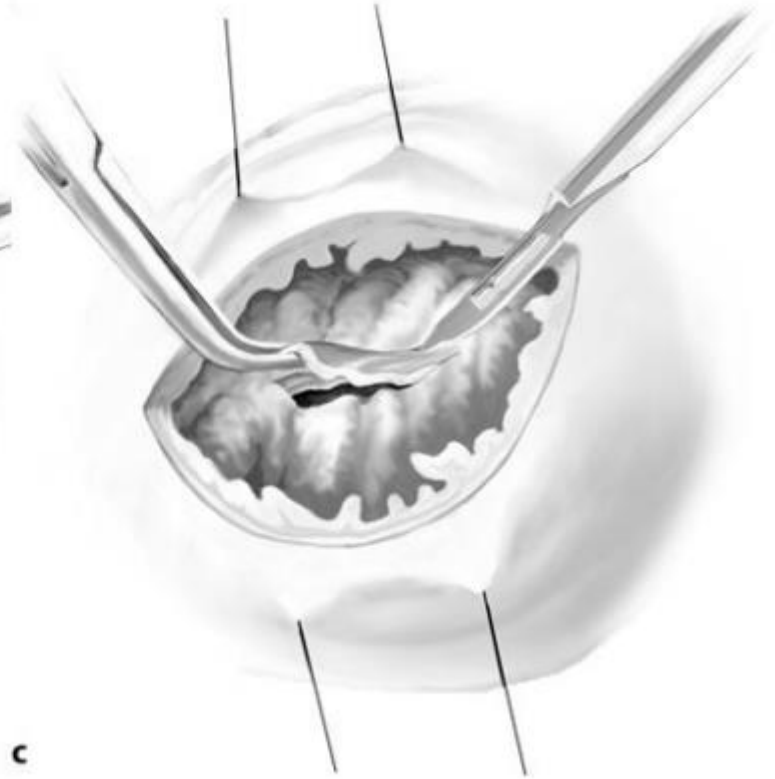
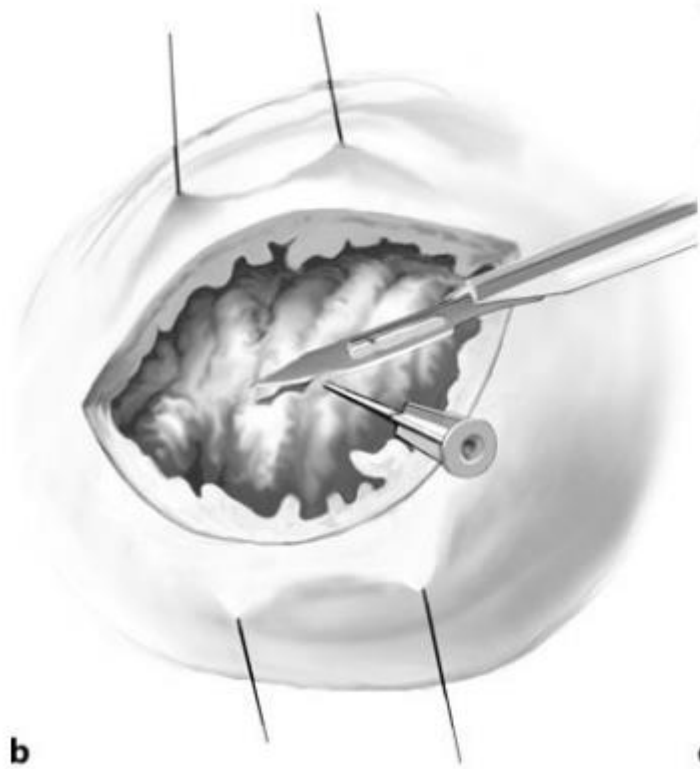
□ Pancreatic body
Cystogastrostomy
Transgastric



□ Pancreatic body

Cystogastrostomy

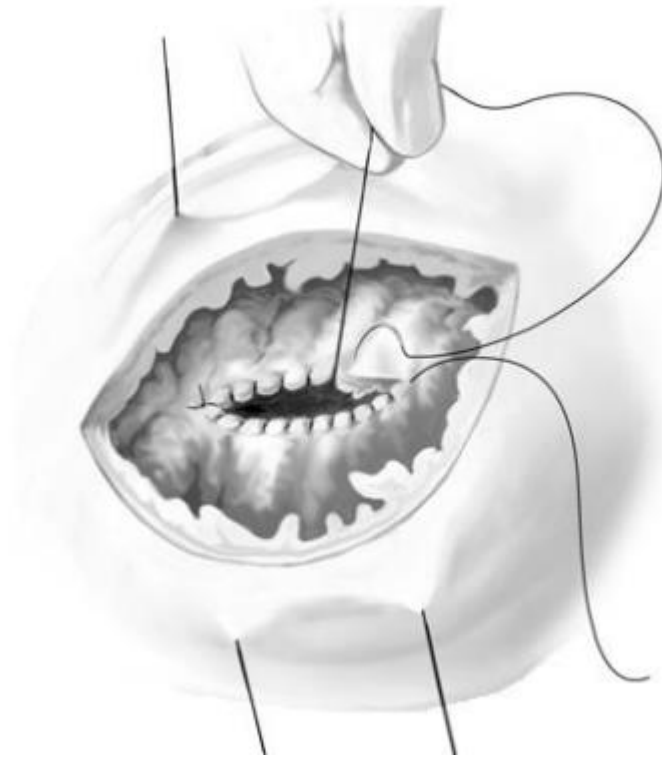
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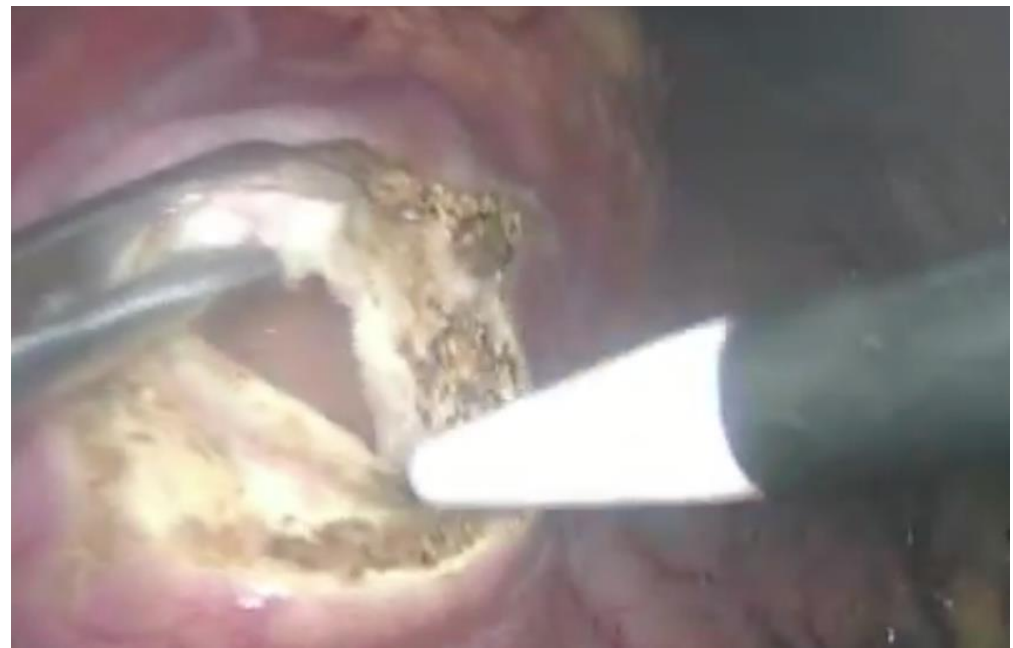


□Pancreatic body

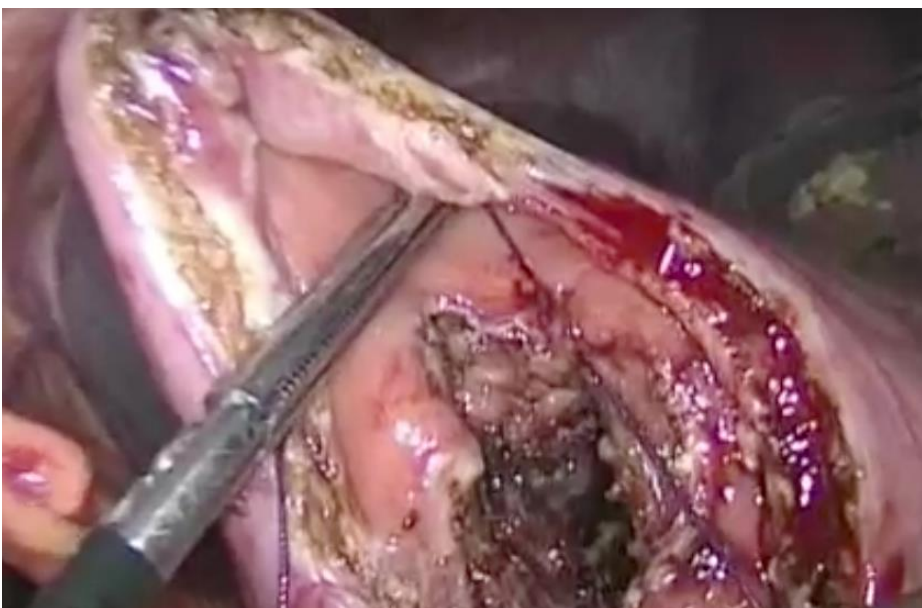
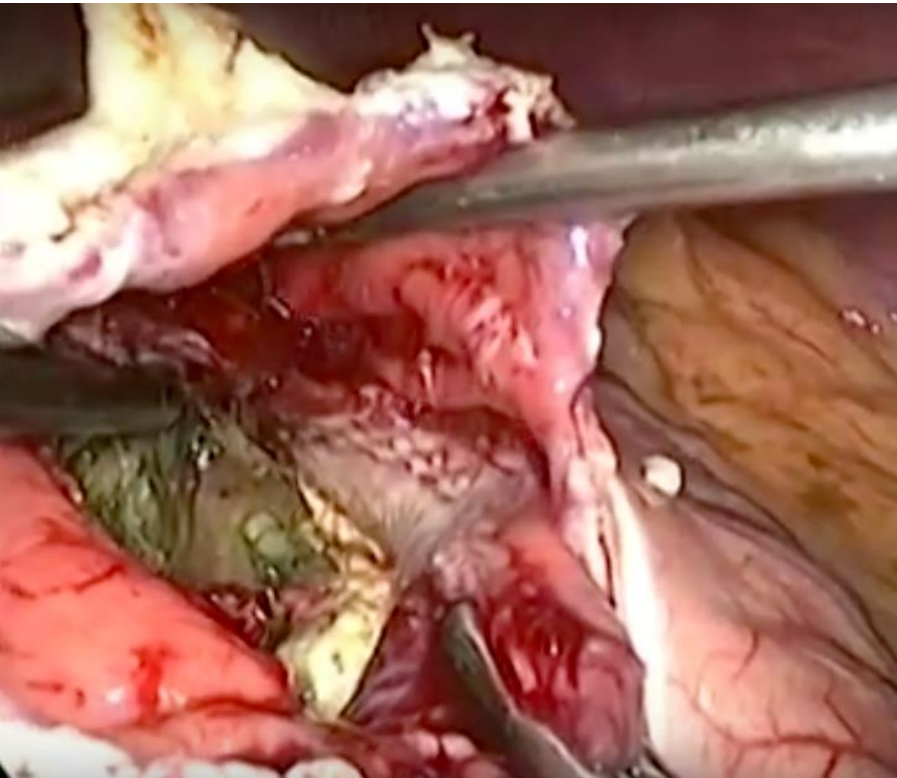
Cystogastrostomy

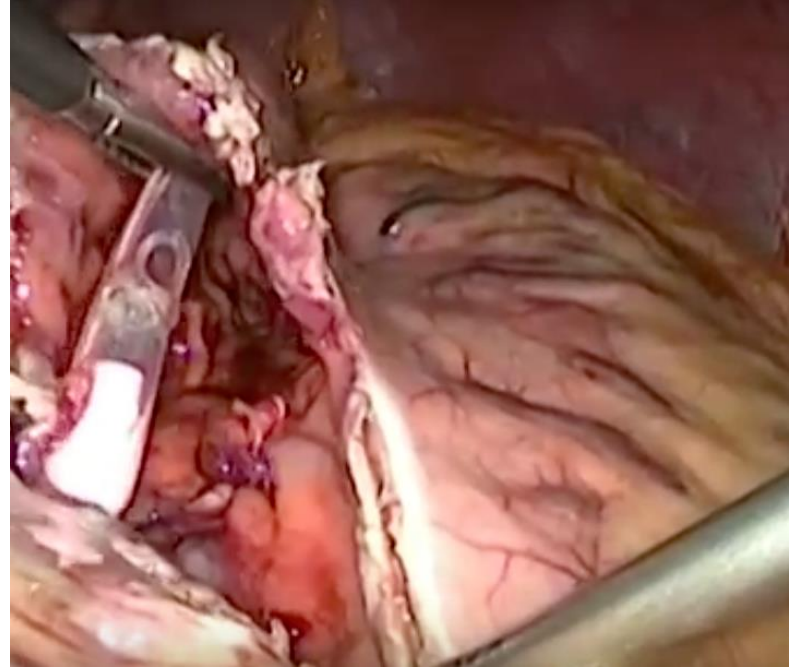
Transgastric

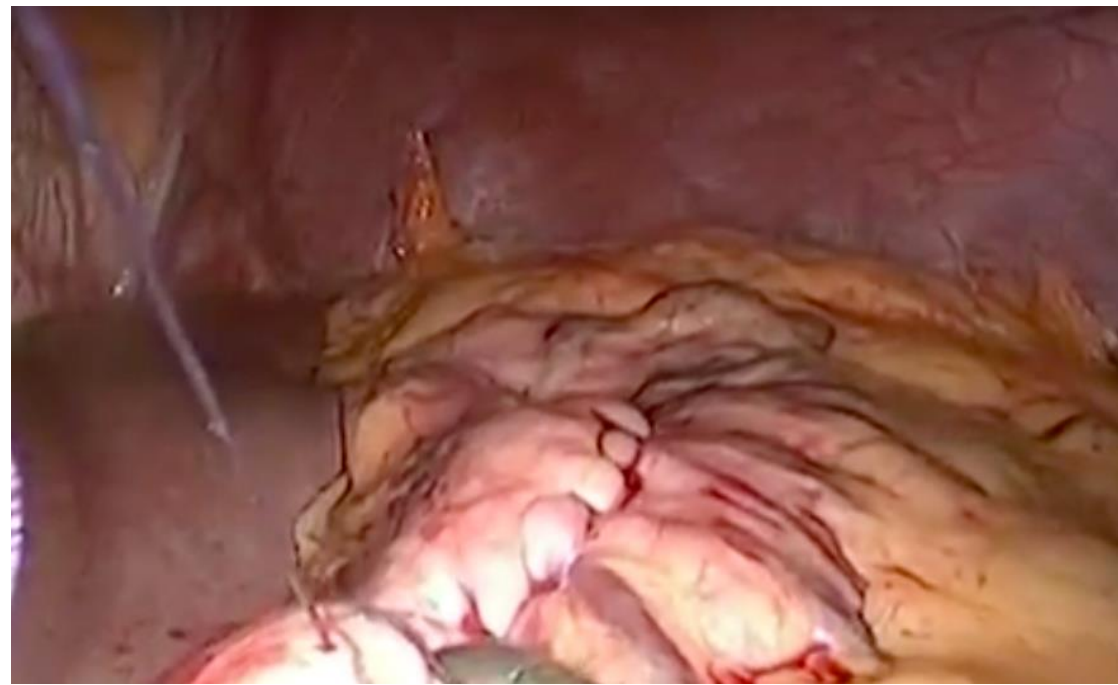




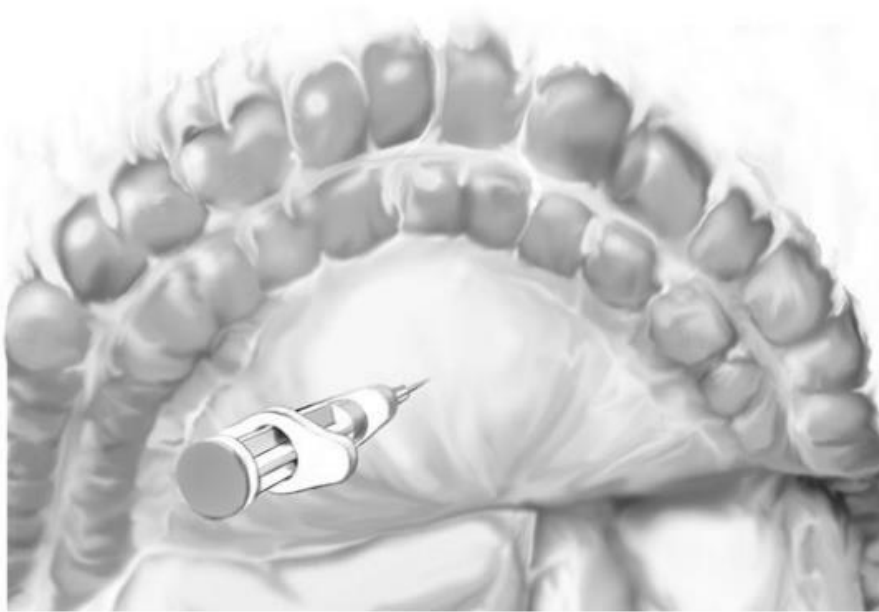




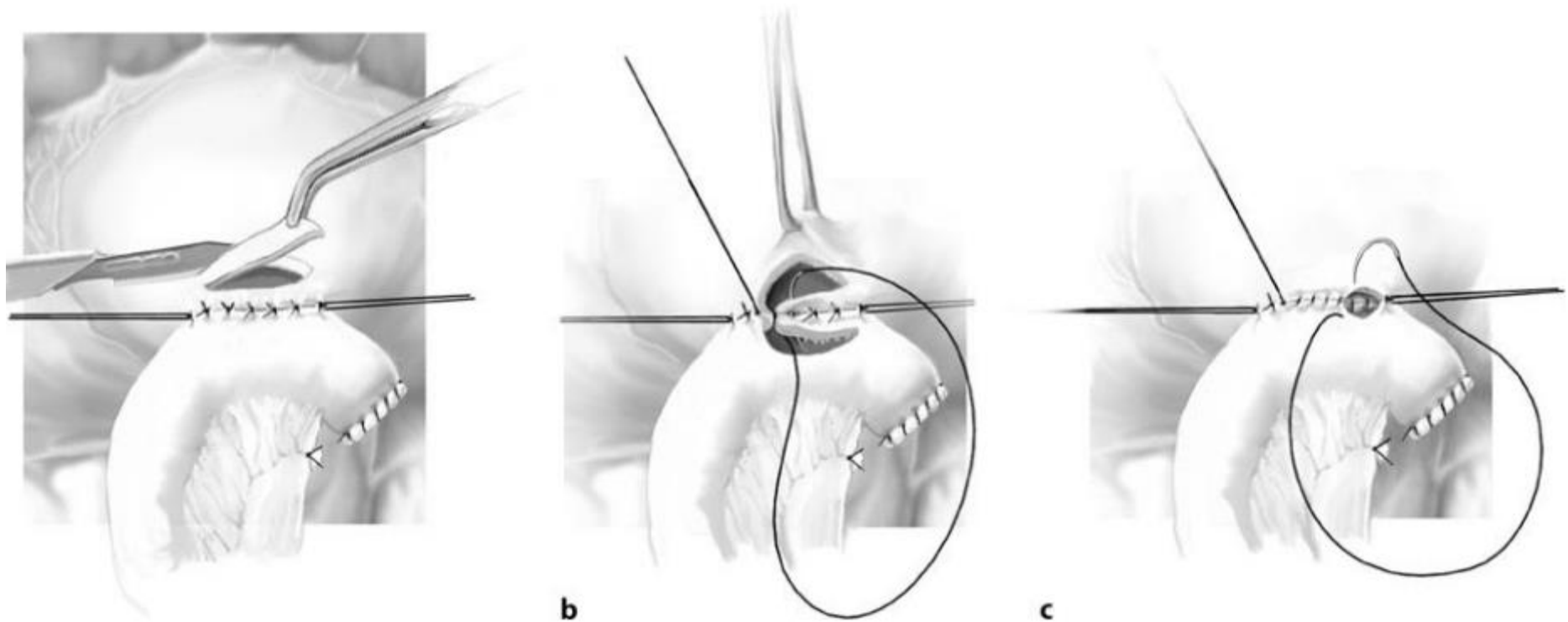




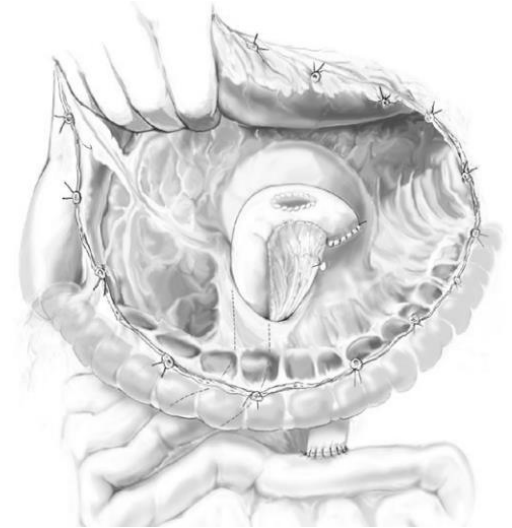
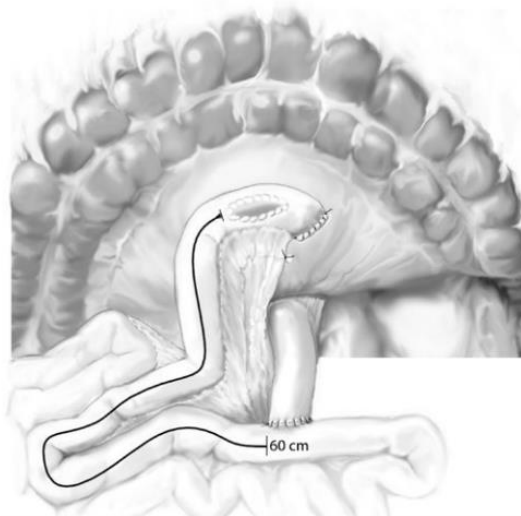
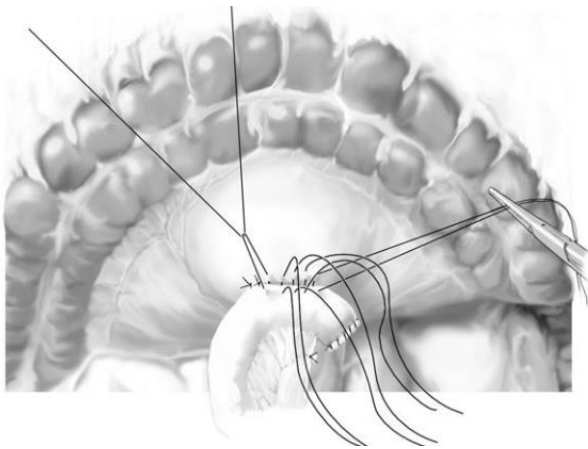
□ Pancreatic body Cystojejunostomy

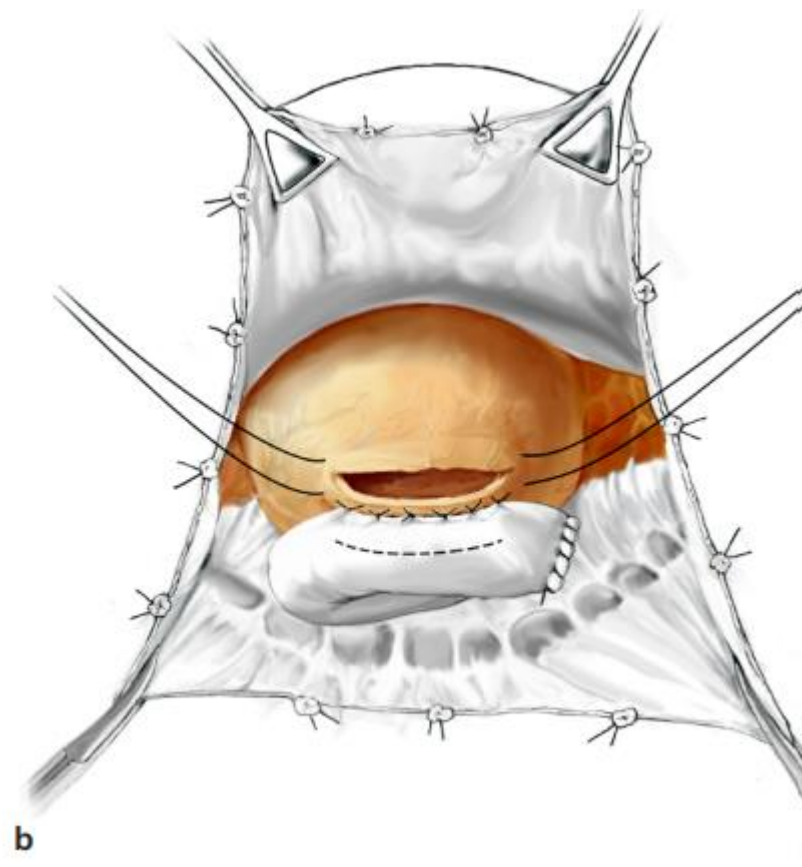
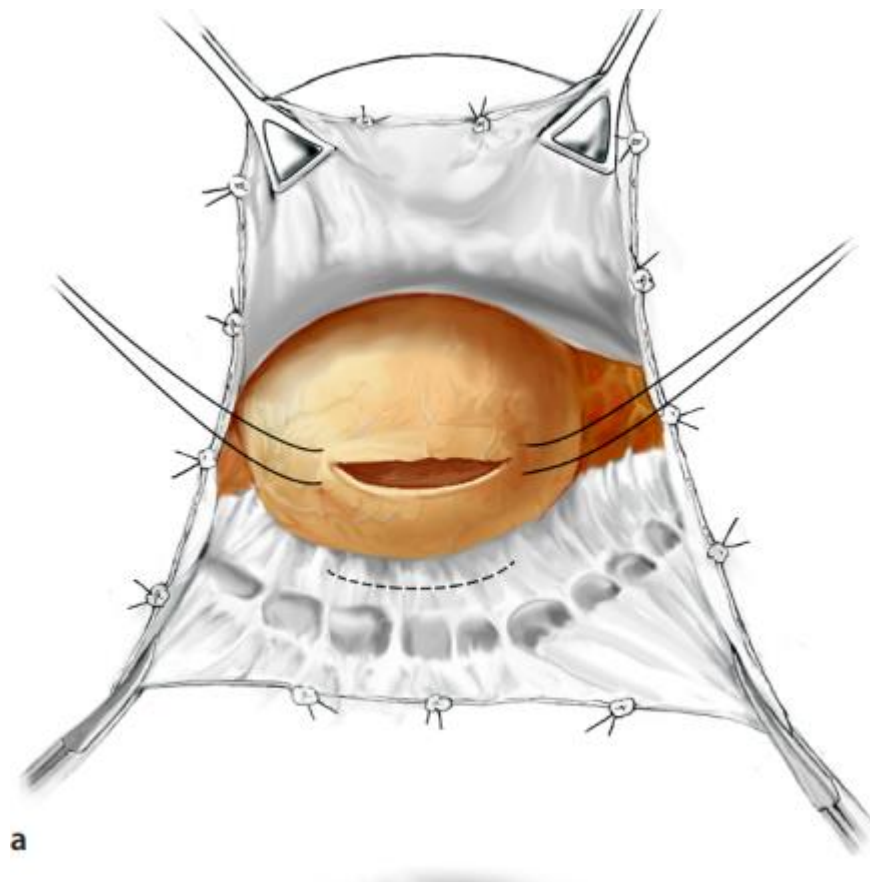


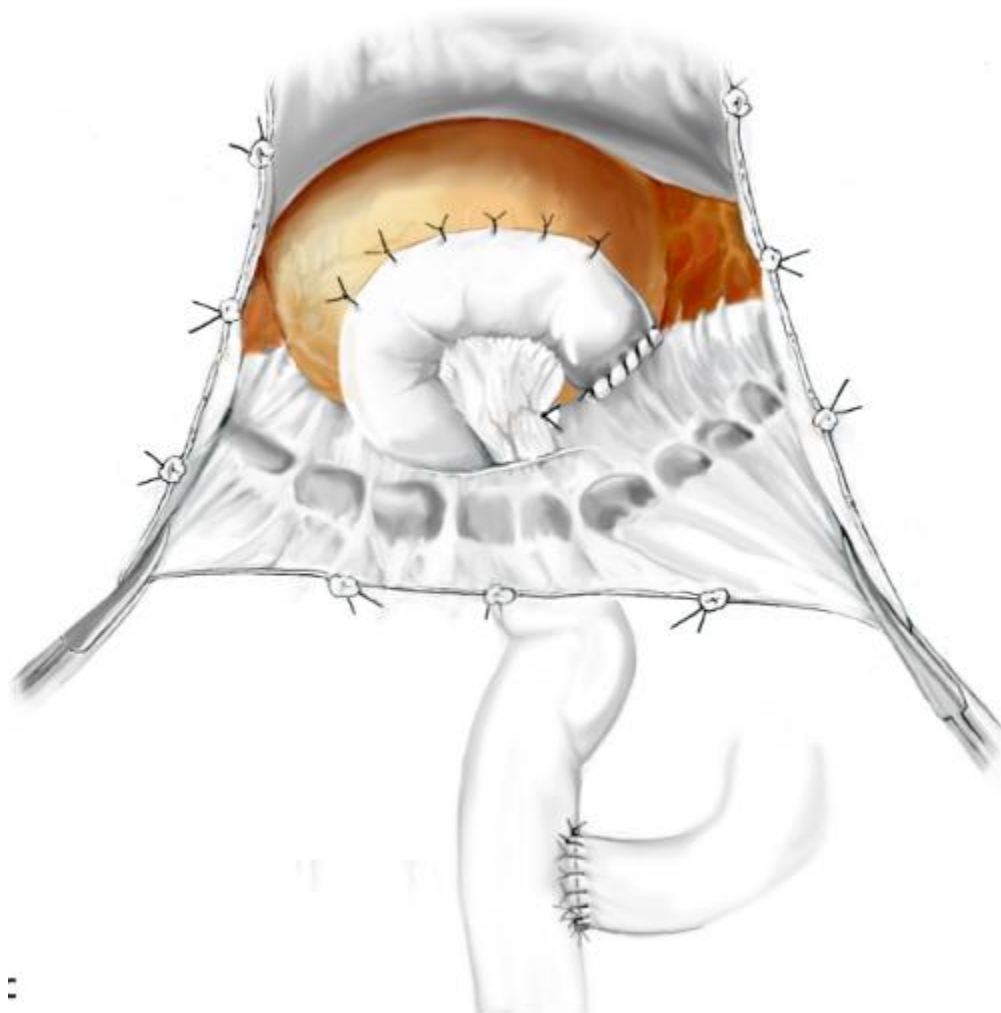
□Pancreatic body Cystojejunostomy



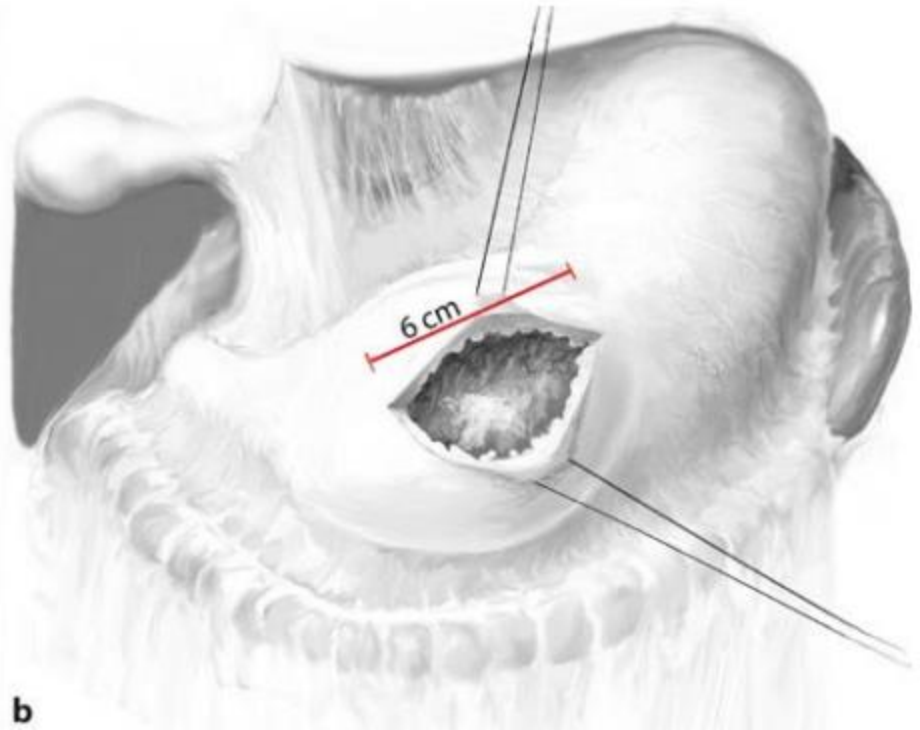
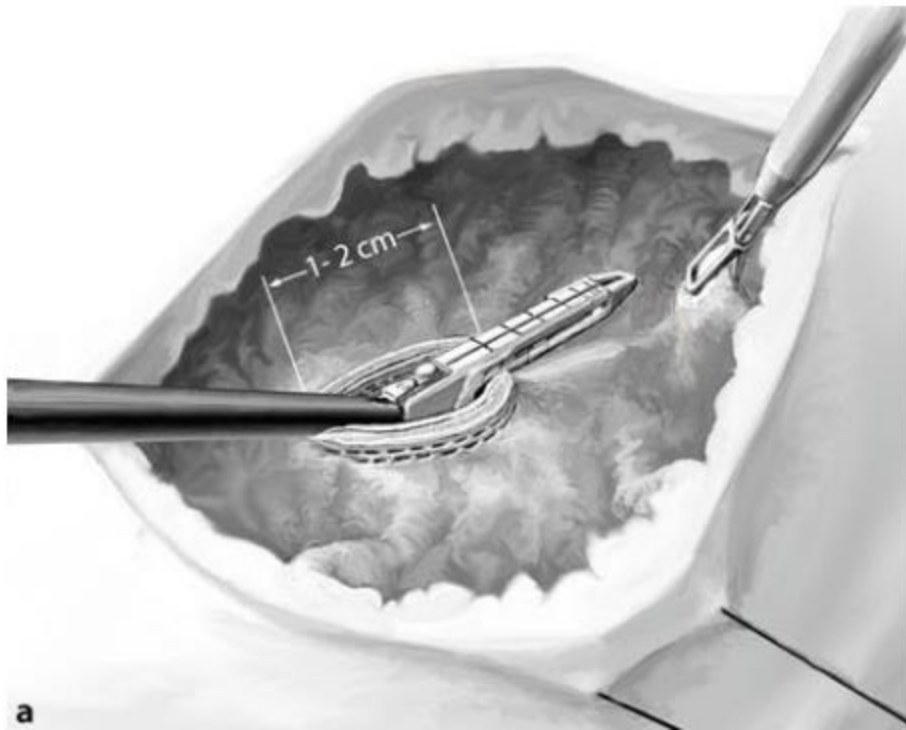
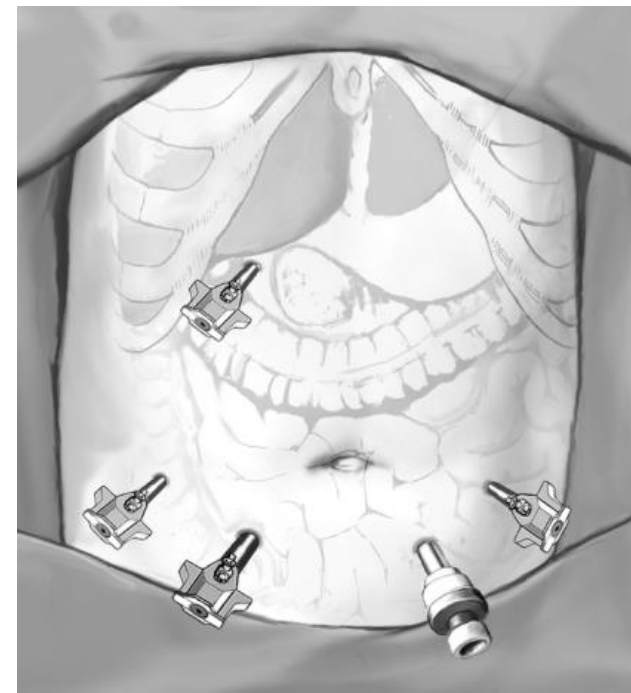
□Pancreatic body Cystojejunostomy

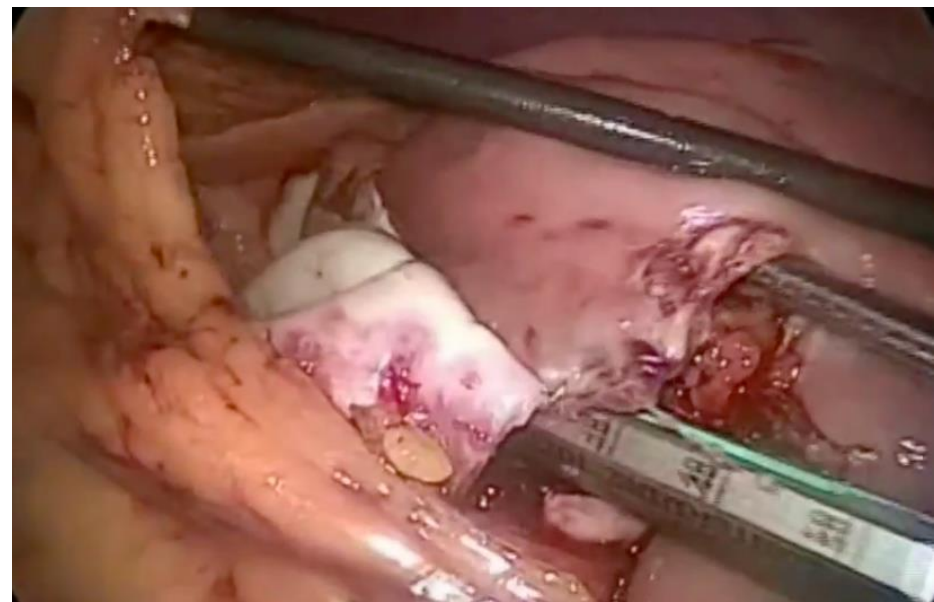


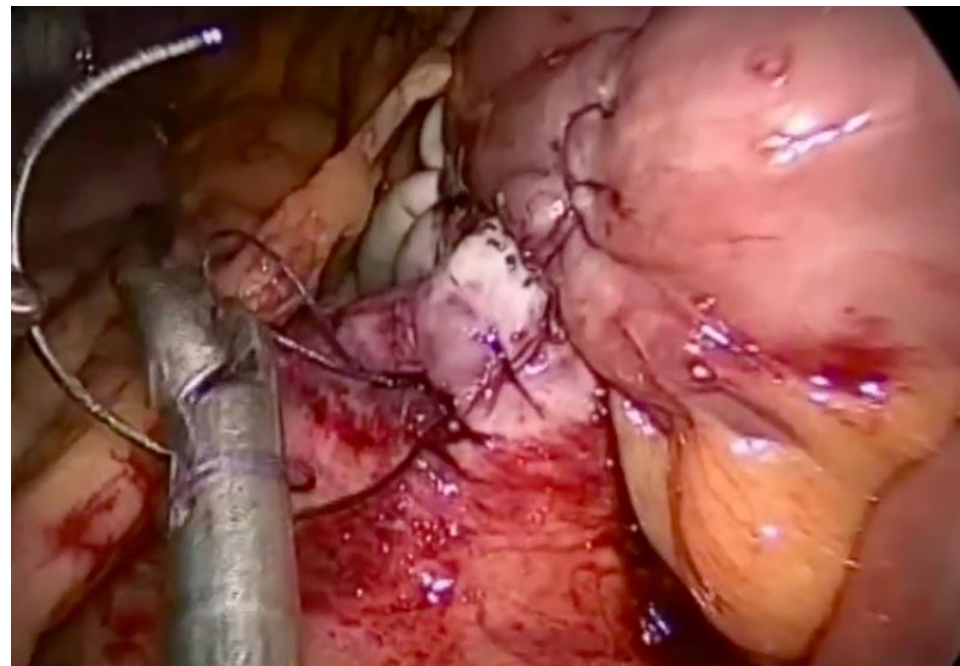
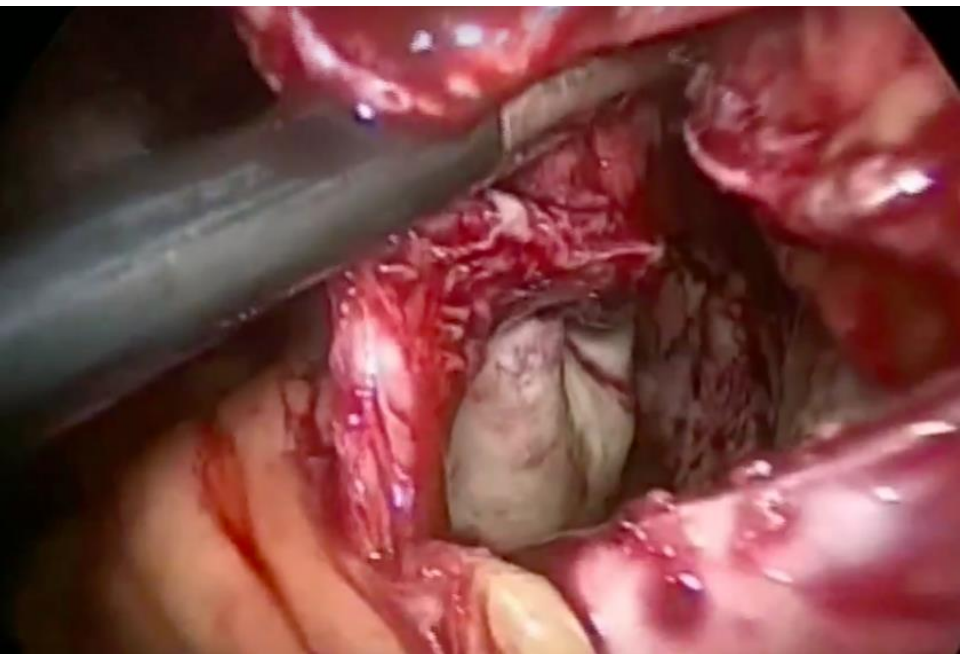
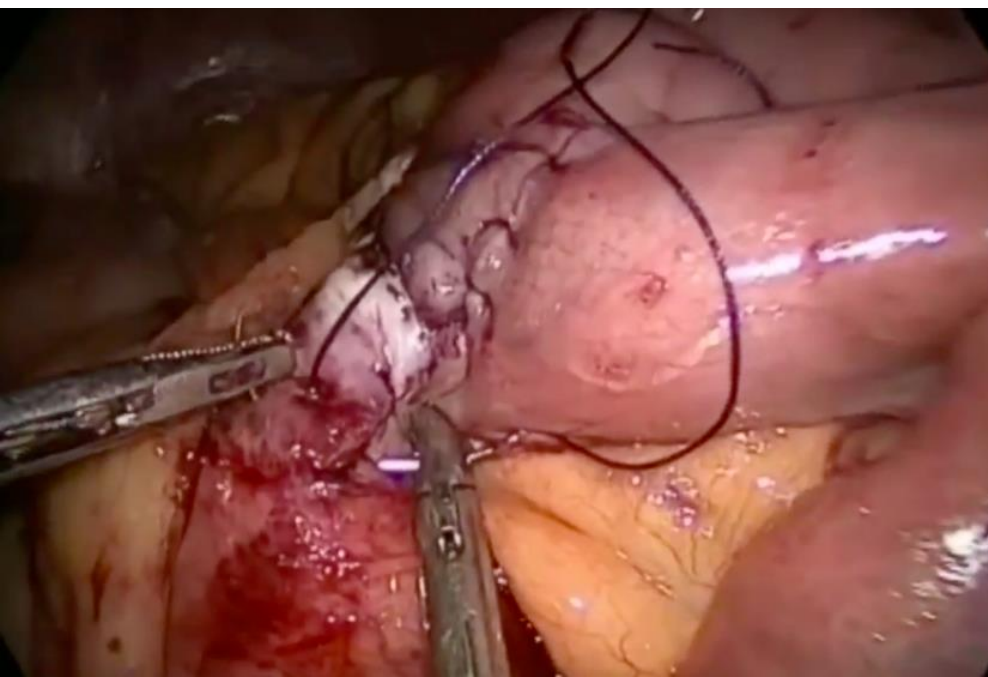


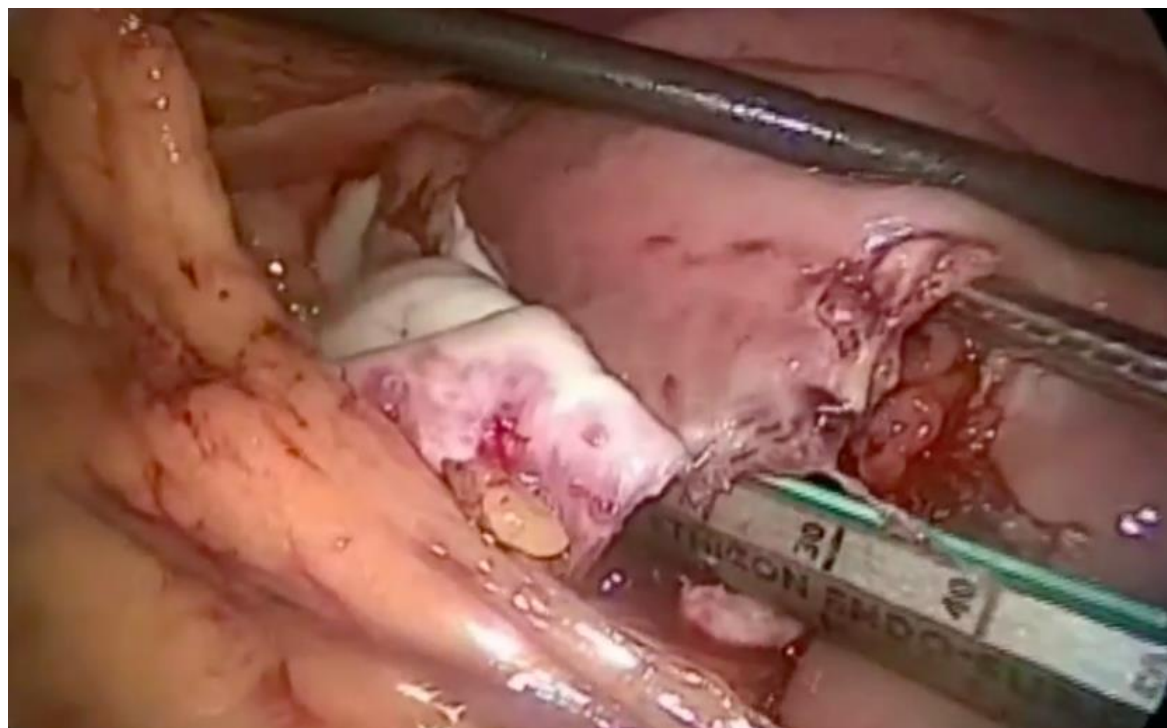
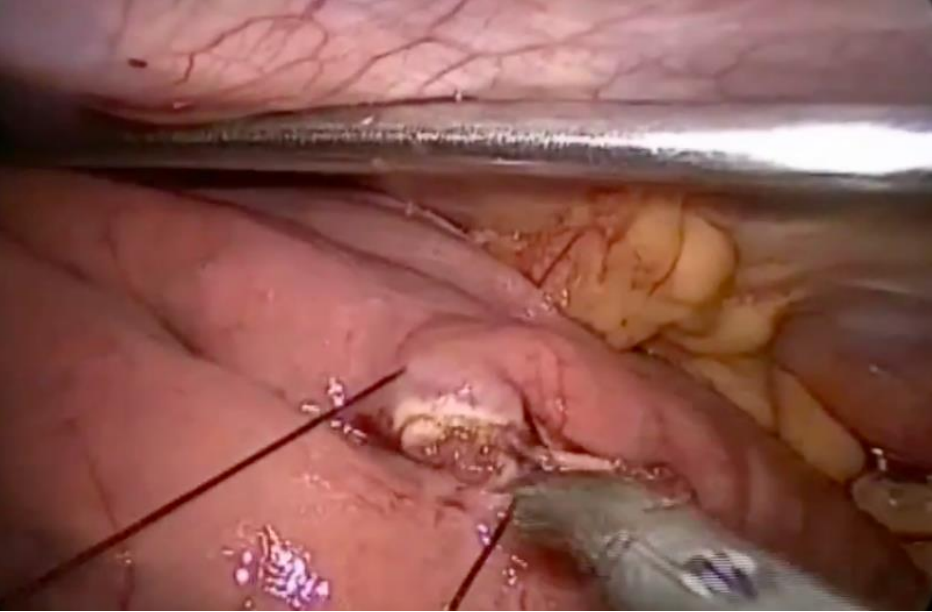


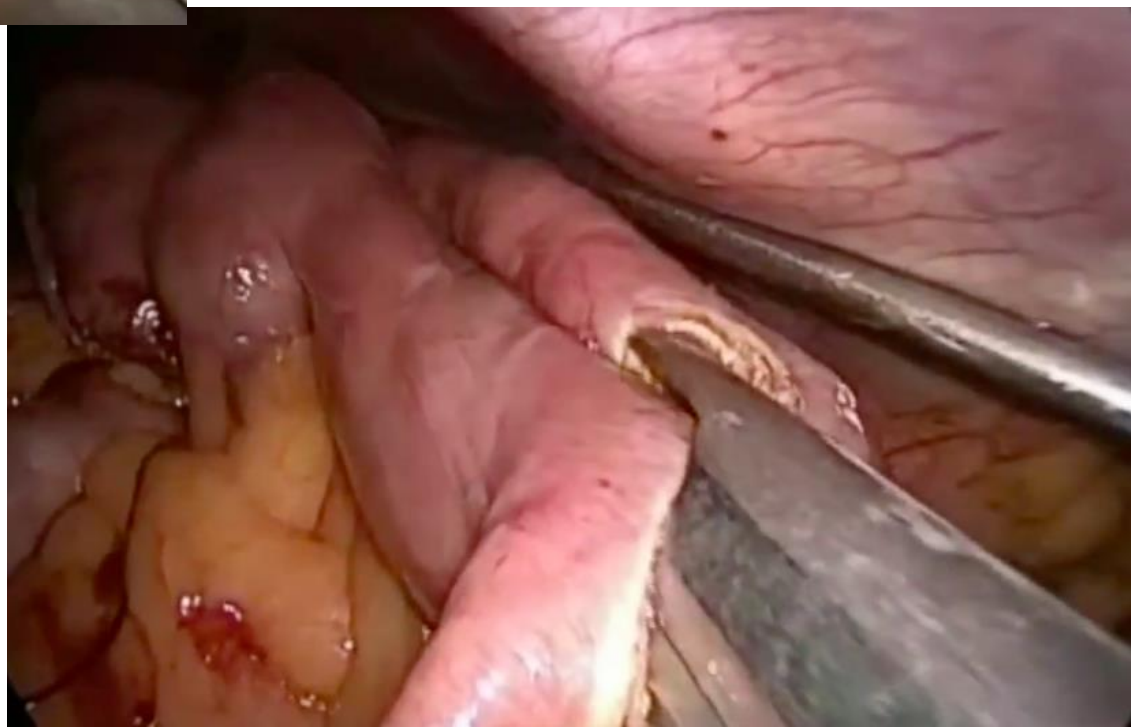
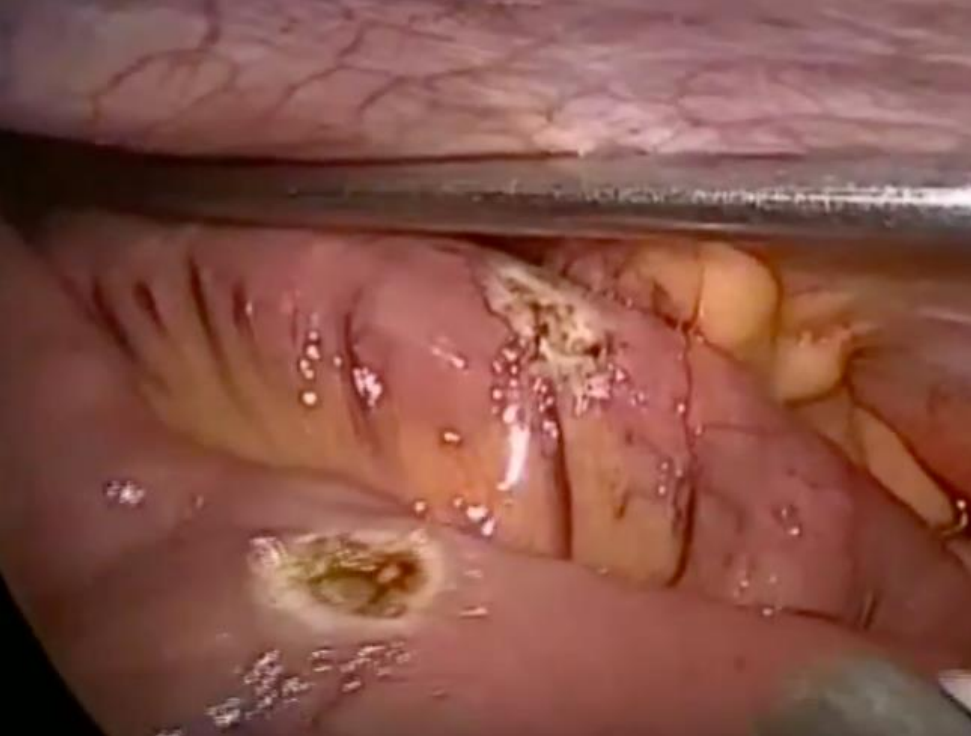
□Pancreatic body Cystojejunostomy Laparoscopic

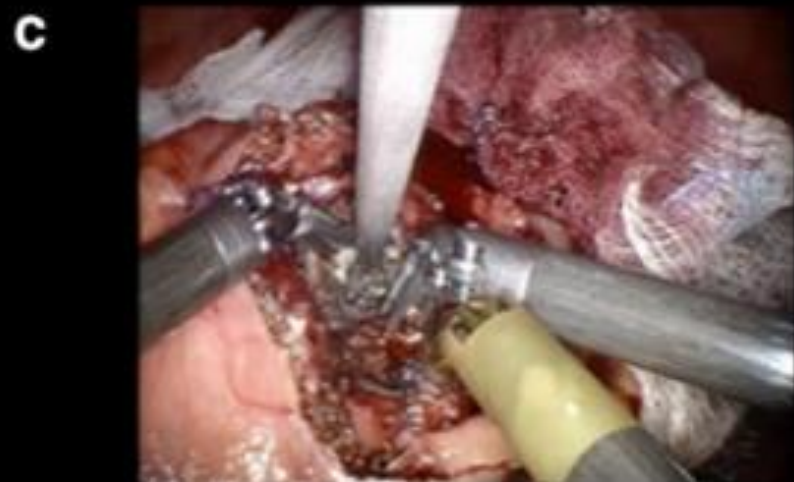
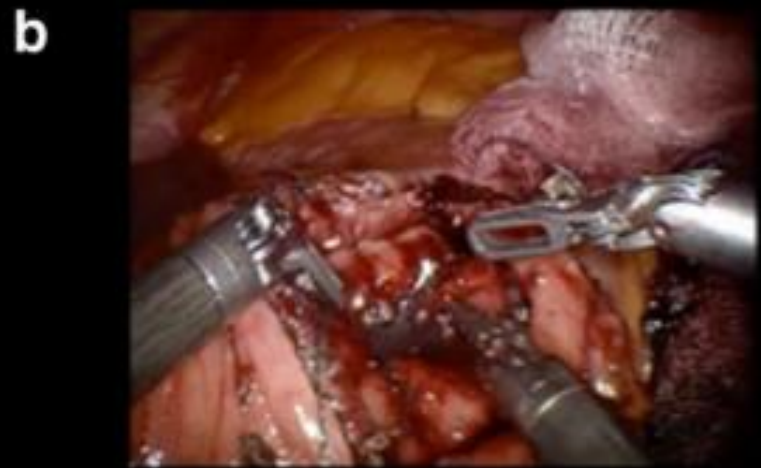




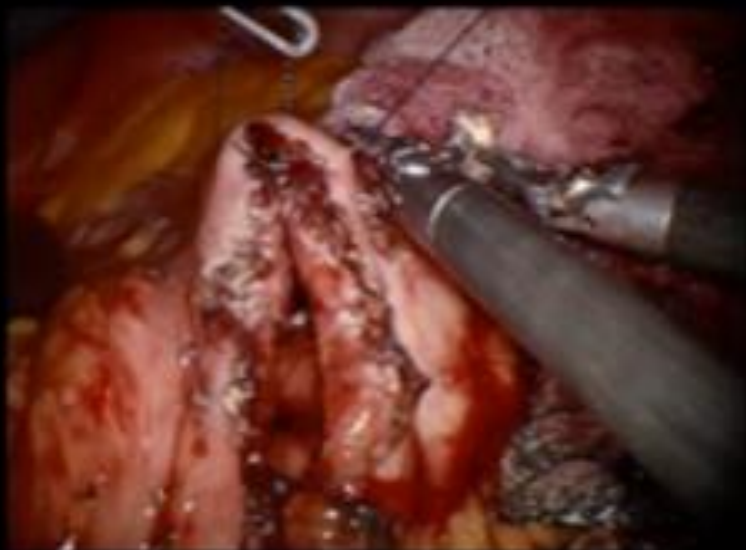






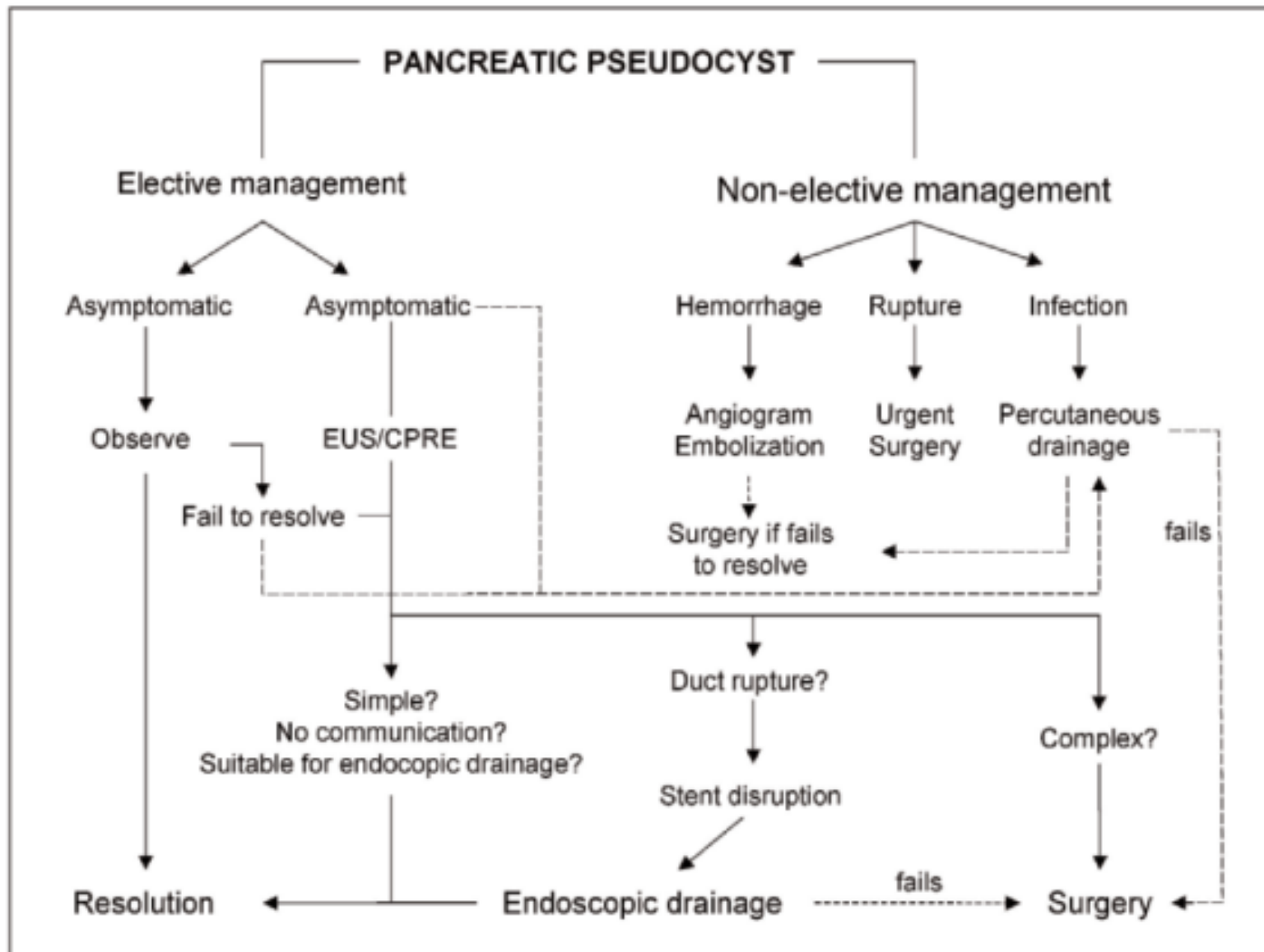


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São Luís



Obrigado!