Endoscopic Management of Acute Pancreatitis

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Take Home Points

- ERCP is not needed for most patients with gallstone pancreatitis
- Asymptomatic pancreatic pseudocysts do not warrant intervention regardless of size
- Transpapillary drainage can be considered for smaller pseudocysts that communicate with the pancreatic duct
Take Home Points

• Transmural drainage has become the preferred approach for all pseudocysts
• A minimally invasive approach starting with endoscopic necrosectomy is the initial procedure of choice for WOPN
Etiologies for Acute Pancreatitis

- Gallstones
- ETOH
- Medications (6-MP, Azathioprine)
- Hypertriglyceridemia
- Hypercalcemia
- Autoimmune pancreatitis
- Malignancy
- Idiopathic
Agenda

• Diagnosis and therapy for CBD stones

• Endoscopic management of pancreatic pseudocyst

• Endoscopic management of pancreatic necrosis
Do most patients with gallstone pancreatitis require an ERCP?

No
• ERCP is not needed in most patients with gallstone pancreatitis who lack evidence of ongoing biliary obstruction

• Patients with AP and concurrent cholangitis should undergo ERCP within 24h of admission

• In the absence of cholangitis and/or jaundice, MRCP or EUS rather than diagnostic ERCP should be used to screen for choledocholithiasis
EUS for Choledocholithiasis

- Highly accurate in detecting CBD stones (sensitivity >95%)
- Less invasive than ERCP
- Average procedure time: 10 minutes
- Can be performed with ERCP under one setting
Diagnosis by EUS
MRCP for Choledocholithiasis

- Accuracy about the same as EUS
- Completely non-invasive
- Average time of examination: 15 minutes
- Contraindications: pacemaker, claustrophobia
Diagnosis by MRCP
• Systemic review of 5 randomized, prospective trials comparing EUS and MRCP in diagnosing CBD stones

• 301 patients underwent both EUS and MRCP

• 108 with confirmed CBD stones

• EUS: Sensitivity 93% Specificity 96%

• MRCP: Sensitivity 85% Specificity 93%

ERCP for Stone Removal
Endoscopic Management of Pancreatic Pseudocysts
# Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
<th>Contrast-enhanced CT findings</th>
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<tbody>
<tr>
<td>Acute peripancreatic fluid collection</td>
<td>Peripancreatic fluid associated with interstitial edematous pancreatitis with no associated peripancreatic necrosis. This term applies only to areas of peripancreatic fluid seen within the first 4 weeks after onset of interstitial edematous pancreatitis and without the features of a pseudocyst.</td>
<td>Homogeneous collection with fluid density Confined by normal peripancreatic fascial planes No definable wall encapsulating the collection Adjacent to the pancreas (no intrapancreatic extension)</td>
</tr>
<tr>
<td>Pancreatic pseudocyst</td>
<td>An encapsulated collection of fluid with a well-defined inflammatory wall usually outside the pancreas with minimal or no necrosis. This entity usually requires &gt;4 weeks after onset of interstitial edematous pancreatitis to mature.</td>
<td>Well circumscribed, usually round or oval homogeneous fluid density No non-liquid component Well-defined wall (completely encapsulated) Maturation usually requires &gt;4 weeks after onset of acute pancreatitis Occurs after interstitial edematous pancreatitis</td>
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<tr>
<td>Acute necrotic collection</td>
<td>A collection containing variable amounts of both fluid and necrosis associated with necrotizing pancreatitis; the necrosis can involve the pancreatic parenchyma and/or the peripancreatic tissues.</td>
<td>Occurs only in the setting of acute necrotizing pancreatitis Heterogeneous and non-liquid density of varying degrees in different locations (some appear homogeneous early in the course) No definable wall encapsulating the collection Can be intrapancreatic and/or extrapancreatic</td>
</tr>
<tr>
<td>Walled-off necrosis</td>
<td>A mature, encapsulated collection of pancreatic and/or peripancreatic necrosis that has developed a well-defined inflammatory wall. This usually occurs &gt;4 weeks after the onset of necrotizing pancreatitis.</td>
<td>Heterogeneous with liquid and non-liquid density with varying degrees of loculations (some may appear homogeneous) Well-defined wall (completely encapsulated) Intrapancreatic and/or extrapancreatic location Maturation usually requires 4 weeks after onset of acute necrotizing pancreatitis</td>
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</tbody>
</table>
Pseudocyst Management

1. Surgical drainage/resection
2. Percutaneous drainage
3. Endoscopic drainage
   ✓ transmural
   ✓ transpapillary
Equal Efficacy of Endoscopic and Surgical Cystogastrostomy for Pancreatic Pseudocyst Drainage in a Randomized Trial

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Table 3. Outcomes of Endoscopic and Surgical Treatments After 24 Months of Follow-Up Evaluation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Endoscopy (n = 20)</th>
<th>Surgery (n = 20)</th>
<th>Endoscopic results vs surgical results (95% CI)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recurrence, n (%)</td>
<td>0</td>
<td>1 (5)</td>
<td>-</td>
<td>.</td>
</tr>
<tr>
<td>Treatment success, n (%)</td>
<td>19 (95)</td>
<td>20 (100)</td>
<td>-5 (-15 to 5)c</td>
<td>.50</td>
</tr>
<tr>
<td>Treatment failure, n (%)</td>
<td>1 (5)</td>
<td>0</td>
<td>5 (-5 to 15)c</td>
<td>.50</td>
</tr>
<tr>
<td>Complications, n (%)</td>
<td>0</td>
<td>2 (10)</td>
<td>-10 (-23 to 3)c</td>
<td>.24</td>
</tr>
<tr>
<td>Re-intervention, n (%)</td>
<td>1 (5)</td>
<td>1 (5)</td>
<td>0 (-14 to 14)c</td>
<td>.76</td>
</tr>
<tr>
<td>Hospital stay, median (IQR), days</td>
<td>2 (1-4)</td>
<td>6 (5-9)</td>
<td>-4 (-5 to -3)d</td>
<td>&lt;.001c</td>
</tr>
<tr>
<td>Hospital costs, mean (SD), 2009 US$</td>
<td>7011 (4171)</td>
<td>15,052 (10,670)</td>
<td>-8040 (-13,458 to -2623)</td>
<td>.003e</td>
</tr>
</tbody>
</table>

Indications for Treatment

• **Presence of symptoms**
  – Abdominal pain, early satiety
  – Gastric outlet obstruction
  – Biliary obstruction

• **Infection**
Is Fluid Analysis Necessary Before Pseudocyst Drainage?
Assessing Main Pancreatic Duct

**MRCP**

- **Pro**
  - Non-invasive
  - Secretin to better assess presence/location of leak

- **Con**
  - Visualization of PD may be obscured by presence of a large collection
  - Non-therapeutic

**ERCP**

- **Pro**
  - May be more accurate than MRCP in identifying leak
  - Provide therapy if present

- **Con**
  - High failure rate of ERCP
  - Risk of infection the collection
  - Risk of post-ERCP pancreatitis
Pre-procedure Preparation

• Anticoagulation and antiplatelet medications should be discontinued
• Adequate surgical support
• General anesthesia is universally used
• Carbon dioxide insufflation is recommended
• Antibiotics are typically administered
Endoscopic Transpapillary Drainage

- Cyst < 6cm
- Cyst in communication with pancreatic duct
- Cyst remote from the gastric and duodenal wall
- Presence of PD stones/strictures
- Ongoing PD leak
Technique

- Guidewire maneuvered either into the pseudocyst or across the leak
- Dilation of pancreatic duct strictures
- Prophylactic and postprocedural antibiotics for 5 days
- Scheduled stent exchange/removal in 4 to 6 weeks
Technique
Mediastinal Pseudocyst

Endoscopic Transmural Drainage

- Creation of a fistula between the pseudocyst and the lumen of the stomach or duodenum
- Allows rapid decompression of large cysts
- Immediate relief of pain, obstruction, infection
- EUS can be helpful in selecting the most favorable puncture site
Role of EUS

- Determine if a cyst is truly a pseudocyst
- Assist in localizing site of drainage
- Exclude vascular structures by color flow doppler
- Stent placement possible with therapeutic echoendoscopes
Transmural Drainage
Transmural Drainage
Post-Cystgastrostomy
After-Procedure Care

- Overnight observation
- Antibiotic coverage for 3 to 5 days
- Follow up CT in 1 to 2 weeks
- Endoscopic stent removal after cyst resolution
Pseudocyst Management

Asymptomatic
- Follow
- Persists 6-12 months
- Drain

Symptomatic
- Drain

*Large cysts can be safely followed, but are more likely to require drainage
Lumen-apposing Metal Stent
Consensus favors minimally invasive methods (endoscopic necrosectomy) over surgery for the management of pancreatic necrosis.

Early referral to an expert center is important.
• Retrospective case series: 124 patients
• Direct endoscopic debridement (78/124: 63%)
• Technical success: 100%
• Clinical success: 86% (13 IR/3 Surgery)
• Adverse events: Bleeding (2), Stent occlusion (9), Stent migration (3)

Pancreatic Necrosectomy
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Thank you for your attention