Contemporary Management of Pancreatic Pseudocysts

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Disclosures

• None
Outline

• Pancreatic fluid collections
• Understanding Pseudocyst Formation and Location
• Pseudocyst drainage throughout history
• Endoscopic Drainage
  – Lumen opposing metal stent deployment
• Nurses notes
Pancreatic Fluid Collections

• In 2013, a revision of the Atlanta classification of acute pancreatitis updated the description of inflammatory pancreatic fluid collections to better reflect the underlying pathophysiology.

• Fluid collections are now described as <4 weeks or >4 weeks old.

• *Endoscopic intervention is generally reserved for cysts >4 weeks old.*
# Types of fluid collections

<table>
<thead>
<tr>
<th>Acute Peripancreatic Collection</th>
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<tbody>
<tr>
<td>- &lt; 4 weeks</td>
</tr>
<tr>
<td>- In interstitial pancreatitis</td>
</tr>
<tr>
<td>- Homogeneous - fluid density</td>
</tr>
<tr>
<td>- No fully definable wall</td>
</tr>
<tr>
<td>- Adjacent to pancreas</td>
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<tr>
<td>- Confined by normal fascial planes</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Acute Necrotic Collection</th>
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<tbody>
<tr>
<td>- &lt; 4 weeks</td>
</tr>
<tr>
<td>- In necrotizing pancreatitis</td>
</tr>
<tr>
<td>- Heterogeneous collection</td>
</tr>
<tr>
<td>- No fully definable wall</td>
</tr>
<tr>
<td>- Intra- or extrapancreatic</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Pseudocyst</th>
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<tbody>
<tr>
<td>- &gt; 4 weeks</td>
</tr>
<tr>
<td>- In interstitial pancreatitis</td>
</tr>
<tr>
<td>- Homogeneous - fluid density</td>
</tr>
<tr>
<td>- Well defined wall</td>
</tr>
<tr>
<td>- Adjacent to pancreas</td>
</tr>
<tr>
<td>- No non-liquid component</td>
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</tbody>
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<tr>
<th>Walled-off Necrosis</th>
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<tbody>
<tr>
<td>- &gt; 4 weeks</td>
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<tr>
<td>- In necrotizing pancreatitis</td>
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Acute Peripancreatic collection
Acute Necrotic collection
Pseudocysts
Walled off necrosis (WON)

- Necrotic debris or septations may be present.
- Not purely fluid as in a pseudocyst.
- Most persistent pancreatic fluid collections are now classified in this category.
Beware –

Other types of pancreatic cysts
What is a pseudocyst?

• No true epithelial lining

• Pseudocyst fluid
  – Similar electrolyte concentration to plasma.
  – High levels of amylase, lipase and digestive enzymes such as trypsin.
  – In general, have LOW CEA levels (distinguishing pseudocysts from mucinous cysts)
Pseudocyst Formation
Etiologies of pseudocyst formation

• Acute pancreatitis
• Chronic pancreatitis – increased pressure from ductal strictures or calculi
• Trauma
• Obstruction from pancreatic neoplasms
Why drain a pseudocyst?

• Most small cysts <4cm will spontaneously resolve.
• Cysts >6cm tend to persist or increase in size over time
• Necrosis, infection, sepsis, venous thrombosis, can result from persistent pseudocysts, so large cysts may be drained prophylactically
• *Symptomatic GI obstruction is the main reason for intervention on pseudocysts.*
Complications of percutaneous drainage

- After percutaneous drainage, catheter is maintained until output <50ml/day.
- Failure rate 16%
- Recurrence rates 7%
- Complications
  - Conversion into an infected pseudocyst (10%)
  - Catheter-site cellulitis
  - Pancreatico-cutaneous fistula
Understanding Retroperitoneal Access
Endoscopic Drainage – The old fashioned way

A. Transgastric needle puncture of cyst
B. Balloon dilatation
C. Double pigtail stent inserted over guide wire
D. Cyst contents drain into stomach
Contraindications to endoscopic cyst drainage

• >1cm distance between gastric wall and pseudocyst wall (relative contraindication)
• Immature cyst wall (more than 6 weeks is ideal)
• Cyst too small (ideally >6cm)
• Gastric varices
• Bleeding dyscrasias
• Pseudoaneurysm
AXIOS Stent

- A “lumen apposing” metal stent
- 10 or 15mm internal diameter
- An innovative way to rapidly drain pancreatic pseudocysts using EUS guidance.
Axios – Basic Principles

• Pseudocysts occupy the retroperitoneal space.
• The stomach borders this space, EUS given an excellent view into the retroperitoneum.
• Using a linear echoendoscope and a 19guage needle, retroperitoneal collections can easily be drained into the stomach. NO FLOUROSCOPY NECESSARY.
Axios pseudocyst drainage
One step further – Endoscopic Necrosectomy

• Necrotic pseudocysts are often encountered in patients who have had severe pancreatitis.
• Debriding these cysts surgically can be challenging as accessing the retroperitoneum in a patient who is potentially bacteremic can be high risk.
• Axios can be used as a conduit to the cyst, and a standard gastroscope can be used for necrosectomy
Endoscopic Necrosectomy
Endoscopic Necrosectomy tips

• A variety of endoscopic equipment can be used to debride necrotic cysts.
  – Snares
  – Baskets/nets
  – Jumbo forceps
  – Irrigation, Irrigation, Irrigation

• Beware of friable tissue and vessels, be ready to cauterize when necessary.
Possible future indications

- EUS guided gallbladder drainage
- EUS guided biliary drainage
- G-J bypass in gastric outlet obstruction
Nurses notes

• Check for adequate wall suction, as several liters of fluid may need to be rapidly suctioned after cyst-gastrostomy.
• Consider intubation to prevent fluid aspiration.
• Always give antibiotics for diagnostic fluid aspirations without definitive drainage.
• Surgical team should be aware of attempts at endoscopic necrosectomy as bleeding may result.
• Axios stent requires removal at 3 weeks after placement if imaging indicates resolution of fluid collection.
Summary

• Most fluid collections >6 weeks are now considered walled off necrosis.
• These collections can be easily drained using EUS techniques and lumen apposing metal stents.
• Benefits of EUS guided pseudocyst drainage are obvious, and clinical outcomes reveal equivalence to surgical drainage.
Questions?

• Thank You

• Matthew Grossman, MD