Case Presentation

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History

- xx yo female presenting to LMC for pancreatic pseudocyst resection
- Patient had one episode of acute alcoholic pancreatitis about 5 months earlier with conservative management
  - Patient complained of persistent abdominal pain and weight loss about 2 mo ago
  - CT showed pancreatic pseudocysts
  - Surgery was offered, but was delayed due to asthma attack and pneumonia
History

- **PMH:** COPD, asthma, depression, GERD
- **FH:** Non-contributory
- **Social:** smoking 1-2 ppd, alcohol use for 20-30 years, and IVDA
- **Allergies:** NKDA
- **Medications:** Reglan, neurotin, Prevacid, Zocor
Physical Exam

- T 98.7  P 87  R 18  BP 96/67
- General: good, AA&Ox3
- Chest: CTAB
- CVS: RRR, S1,S2
- ABD: soft, ND/NT, BS+, no mass, no surgical scar
- Neuro: intact
Labs and studies

EKG: WNL
CXR: WNL
UA: Negative
OR Course

- 7/20, Patient was taken to OR under GETA
- Chevron incision made
- 3 large pseudocysts located at the tail and body, heavily adherent to surrounding structures
- Distal pancreatectomy and splenectomy performed
- Patient tolerated procedure well, brought to SICU still intubated
Hospital Course

- POD#1, patient doing well, extubated
- POD#2, transferred to floor, ambulating
- POD#3, passed gas and BM, started diet
- POD#4, discharged home
- Office follow-up: no symptom
Pathology

- Pancreatic pseudocysts: 15x14x5, 6x5x1, 3x3x4 with necrotic tissue
- Pancreas with mild chronic inflammatory changes
- Spleen with severe subcapsular hemorrhage (due to surgical manipulation)
Management of pancreatic pseudocysts

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Introduction

- **Definition:**
  - A cystic cavity bound to the pancreas by inflammatory tissue
  - The wall of the cyst lacks an epithelial lining, consisting of fibrous and granulation tissue
  - The cyst contains pancreatic juice or amylase-rich fluid
  - Pseudocysts may be single or multiple, small or large, and can be located either within or outside of the pancreas
  - 1/3 head and 2/3 body and tail
Etiology

- **Acute pancreatitis:**
  - Pseudocysts occur after an acute attack of pancreatitis

- **Chronic pancreatitis:**
  - Pseudocyst formation can be induced by an acute exacerbation of chronic pancreatitis or by progressive ductal obstruction

- **Trauma:**
  - Blunt or penetrating trauma
Pathophysiology

- The cysts stem from disruption of the pancreatic duct and extravasation of enzymatic fluid.
- 2/3 of patients have demonstrable connections to the pancreatic duct.
- In the other third, inflammatory reaction is supposed to have sealed the connection.
Clinical presentation

- Most are asymptomatic
- Could cause abdominal pain, bowel obstruction, vascular occlusion, fistula formation
- Could cause pseudoaneurysm, sudden expansion of the cyst, and GI bleeding
- Could cause ascites and pleural effusion due to rupture or fistula formation
Physical Exam

- Non-specific
- Tender abdomen +/-
- Palpable mass +/-
- Fever +/-
- Ascites +/-
- Pleural effusion +/-
Diagnosis

- Lab study is limited
- CT is the standard test with sensitivity 90-100%
- US
- MRI is useful in differentiating organized necrosis from pseudocyst
- EUS for endoscopic drainage
Differential diagnosis

- Acute fluid collection
- Organized pancreatic necrosis/abscess
- Pancreatic pseudoaneurysm
- Cystic neoplasms
Management of pseudocysts

- Conservative
- Percutaneous drainage
- Endoscopic approach
- Open surgical management
- Laparoscopic management
Conservative?

- **Observation**
- **Traditional surgical teaching:**
  - 4-6 wks for pseudocyst wall to mature to permit suturing
  - Up to 50% of cysts will resolve by 6 wks, after which resolution is unlikely
  - Complication rate up to 50% after 6 wks: infection, obstruction, perforation, pseudoaneurysm and bleeding

Conservative?

- Bradley et al, 1971 to 1976
- 54 of 93 patients with pseudocyst followed by clinical exam and US
- Spontaneous resolution 20%, complication rate 41%, and death rate 14%
- Pseudocysts rarely resolved and high complication rate beyond 7 wks
- Conclusion: prolonged observation exposed patients at unwarranted risks

Yeo, et al., 1978 to 1987

36 of 75 patients managed nonoperatively with CT follow up for 1 year:
- 60% complete resolution
- 40% pseudocysts remained stable or decreased size
- Size > 6 cm more frequently required surgery (67% vs 40%)

Conclusion: A large proportion of asymptomatic patients can be safely managed nonoperatively

Yeo et al. The natural history of pancreatic pseudocysts documented by computed tomography. Surg Gynecol Obstet 1990; 170:411
Conservative?

- Vitas, et al., 1980 to 1985
- 68 of 114 patients initially managed nonoperatively with CT follow-up for 46 months:
  - 24 patients eventually underwent operation
  - 43 patients nonoperative
  - 57% resolution and 38% resolving after 6 months of the diagnosis
  - Size<5 cm, 83% resolution; over 5 cm, 50%
  - 7 patients with size>10cm, no complication
- Conclusion: a nonoperative approach is warranted in selected patients

Conservative

- It is safe to conservatively manage asymptomatic patients with clinical and CT follow-up.
- Therapeutic intervention is warranted in patients with enlarging, infected, or bleeding cysts; or symptomatic.
Percutaneous drainage (PCD)

- Simple aspiration results in recurrence in 70%.
- Catheter drainage with placing a 8-16fr catheter under CT or US.
- Contraindicated in poor compliant patients, duct stenosis, and hemorrhagic cyst.
Percutaneous drainage (PCD)

- Adams et al., compared the outcome of 92 patients with surgery or PCD
- PCD group with lower mortality rate (0% versus 7.1%) and similar morbidity
- PCD group duration of drainage was 42.1 days and drain track infection rate 48.1%

Endoscopic drainage

Cremer et al. in 1989, first reported endoscopic cystoenterostomy in 33 patients:
- Success rates: 96-100%
- Relapse rate 9-19%
- No mortality

Endoscopic drainage

- **Cyst-enterostomy:**
  - Success rate 85%
  - 7% complication
  - Mortality <1%

- **Transpapillary:**
  - Success rate 90%
  - 9% recurrence
  - Complication <15%

Open surgical management

- Cyst-gastrostomy
- Cyst-duodenostomy
- Roux-en-y cyst-jejunostomy
- Distal pancreatectomy
Open surgical management

- **Indication:**
  - cysts associated with infection
  - necrosis
  - cystic tumors
  - pseudoaneurysm
  - require concomitant operative treatment, like obstruction, ductal stricture

- **Biopsy of the cyst wall and send fluid for pathology**

- **Complication 11-24%, mortality 5-9%, recurrence 5-8%**

Laparoscopic management

- Way et al. reported the first case in 1994
- Park, et al., reported 29 pseudocyst patient treated with laparoscopy
  - 28 of 29 was completed successfully
  - Operative time was 2.8 hours
  - Postive hospital stay was 4.4 days
  - Follow-up of 15.8 months, no symptom, no recurrence


Summary

- Pseudocyst formation is common after pancreatitis
- Many will resolve spontaneously
- Observation may be safe for asymptomatic patients
- Symptomatic or infected pseudocysts require therapeutic procedures