Surgical Management of Chronic Pancreatitis

Sean Rim

12/17/09
Case Presentation

- 72 year old female referred to ER by PMD
  - Chronic nausea and abdominal pain
  - Loose stools
  - 30 pound weight loss in 3 months
  - Outpatient MRI concerning for pancreatic malignancy
Case Presentation

- **PMH**
  - HTN
  - DM
  - EtOH

- **Meds**
  - Lantus
  - MVI
Case Presentation

- **Exam**
  - Hemodynamics normal
  - Fingerstick 424
  - Cachectic
  - Abdomen benign
Case Presentation

- Labs WNL
- Amylase 75
- Lipase 5

Admitted to medical service for malnutrition and malignancy workup
Case Presentation

- Hospital day 2
  - EUS revealed calcified pancreas
    - No masses
    - Pancreatic duct 9.5 mm
    - CBD 4.2 mm
    - No gallstones
Operative Course

- Lateral pancreaticojejunostomy with Roux-en-Y anastomosis
  - Operative time 3 hours
  - EBL 150 cc
  - IVF 4 liters
Operative Course

- Atrophic calcified pancreas
- Dilated duct aspirated with needle
- Multiple stones evacuated from opened duct
- No mass at the head, ampulla visible and not obstructed
Postoperative course

- POD 3
  - Clears
- POD 4
  - Low fat diet
- POD 7
  - Discharged
- POD 60
  - Pain free and gaining weight
Chronic Pancreatitis

- Ongoing inflammatory process
- Irreversible destruction of pancreas parenchyma
- Distortion of ductal architecture
Symptoms

- Chronic abdominal pain
- Pancreatic exocrine insufficiency
  - Malabsorption
  - Steatorrhea
- Diabetes
Etiology

- EtOH abuse 70%
- Hyperlipidemia
- Pancreas divisum
- Trauma
- Hypercalcemia
- Idiopathic
Imaging

- CT findings
  - Inflammatory mass
  - Pseudocyst
  - Calcifications
  - Ductal dilatation

- MRCP
- ERCP
Medical management

- Avoid exacerbating factors
- Low fat diet
- Pancreatic enzyme supplementation
Endoscopic Therapy

- ~65% success rate
- 24% eventually require surgery

Surgical Treatment

- Indications
  - Failed nonsurgical therapy
  - Suspicion of cancer

- Drainage versus resection-drainage procedures
Drainage Procedures

- **1954 Duval**
  - Distal pancreatectomy, splenectomy, end-to-side roux-en-Y pancreaticojejunostomy

- **1958 Puestow and Gillespy**
  - Longitudinal incision and invagination into jejunal roux

- **1960 Partington and Rochelle**
  - Side to side longitudinal anastomosis
  - Preserve distal pancreas and spleen
  - Need dilated duct ~6mm
## Surgical management of chronic pancreatitis

Stavros Gourgiotis, Stylianos Germanos and Marco Pericoli Ridolfini

*London, UK*

### Table 1. Results of longitudinal pancreaticojejunostomy for chronic pancreatitis\(^{[30, 31, 33-39]}\)

<table>
<thead>
<tr>
<th>References</th>
<th>Year</th>
<th>No. of patients</th>
<th>Follow-up (years)</th>
<th>Pain relief (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prinz and Greenlee(^{[33]})</td>
<td>1981</td>
<td>43</td>
<td>8</td>
<td>65</td>
</tr>
<tr>
<td>Sarles et al(^{[34]})</td>
<td>1982</td>
<td>69</td>
<td>5</td>
<td>85</td>
</tr>
<tr>
<td>Warshaw(^{[35]})</td>
<td>1984</td>
<td>33</td>
<td>4</td>
<td>88</td>
</tr>
<tr>
<td>Holmberg et al(^{[36]})</td>
<td>1985</td>
<td>51</td>
<td>8</td>
<td>72</td>
</tr>
<tr>
<td>Bradley(^{[30]})</td>
<td>1986</td>
<td>48</td>
<td>6</td>
<td>66</td>
</tr>
<tr>
<td>Nealon et al(^{[31]})</td>
<td>1988</td>
<td>41</td>
<td>1</td>
<td>93</td>
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<tr>
<td>Greenlee et al(^{[37]})</td>
<td>1990</td>
<td>50</td>
<td>8</td>
<td>82</td>
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<tr>
<td>Delcore et al(^{[38]})</td>
<td>1994</td>
<td>28</td>
<td>3.5</td>
<td>86</td>
</tr>
<tr>
<td>Nealon and Matin(^{[39]})</td>
<td>1999</td>
<td>124</td>
<td>6.5</td>
<td>86</td>
</tr>
</tbody>
</table>
Combined Resection-Drainage Procedure

- Inflamed and enlarged pancreatic head
- Requires resection
  - Whipple
  - Beger (Duodenum preserving pancreatic head resection)
  - Frey
Analysis of Surgical Success in Preventing Recurrent Acute Exacerbations in Chronic Pancreatitis

William H. Nealon, MD, and Sina Matin, MD

From the Department of Surgery, The University of Texas Medical Branch, Galveston, Texas

• 259 patients from 1985 to 1999
• Mean follow up 81 months
• Pain relief
• Acute exacerbations
Chronic abdominal pain
Acute on chronic exacerbations
Recurrent acute exacerbations

83% of patients received pain relief after undergoing surgical procedure

Table 2. PAIN RELIEF

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Group 1</th>
<th>Group 2</th>
<th>Group 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPJ</td>
<td>106/124 (86%)</td>
<td>48/60 (80%)</td>
<td>30/33 (91%)</td>
<td>28/31 (90%)</td>
</tr>
<tr>
<td>PHR</td>
<td>42/46 (91%)</td>
<td>14/15 (93%)</td>
<td>18/19 (95%)</td>
<td>10/12 (83%)</td>
</tr>
<tr>
<td>Left resection</td>
<td>19/29 (67%)</td>
<td>8/11 (73%)</td>
<td>9/12 (75%)</td>
<td>2/6 (33%)</td>
</tr>
<tr>
<td>Overall</td>
<td>153/185 pts (83%)</td>
<td></td>
<td></td>
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</tr>
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</table>

LPJ, lateral pancreaticojejunostomy; PHR, pancreatic head resection; left resection, distal pancreatectomy.
Table 4. **MEAN YEARLY RATE OF ACUTE EXACERBATIONS**

<table>
<thead>
<tr>
<th></th>
<th>Total (113 pts)</th>
<th>Group 2 (64 pts)</th>
<th>Group 3 (49 pts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>7.2 ± 2.2</td>
<td>6.3 ± 2.1</td>
<td>7.8 ± 1.8</td>
</tr>
<tr>
<td>Postoperative</td>
<td>1.4 ± 1.9*</td>
<td>1.6 ± 2.3*</td>
<td>1.1 ± 1.9*</td>
</tr>
</tbody>
</table>

Data are expressed as mean events per year ± SEM.
* $P < .05$. 
Long-term Follow-up of a Randomized Trial Comparing the Beger and Frey Procedures for Patients Suffering From Chronic Pancreatitis

Tim Strate, MD,* Zohre Taherpour, MD,* Christian Bloechle, MD,† Oliver Mann, MD,* Jens P. Bruhn, MD,* Claus Schneider, MD,* Thomas Kuechler, MD,‡ Emre Yekebas, MD,* and Jakob R. Izbicki, MD*

• 74 patients with chronic pancreatitis
  – Inflammatory mass at the head
  – Severe recurrent attacks
  – History > 1 year
• Randomized to Beger vs Frey
• Follow up 72 - 144 months
Beger vs Frey Pain Score
<table>
<thead>
<tr>
<th>Symptom Scale and/or Items*</th>
<th>Beger (n = 26)</th>
<th>Frey (n = 25)</th>
<th>P (Mann-Whitney U)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatigue</td>
<td>33.3 (0–100)</td>
<td>33.3 (0–100)</td>
<td>0.716</td>
</tr>
<tr>
<td>Nausea and vomiting</td>
<td>0 (0–83.3)</td>
<td>0 (0–100)</td>
<td>0.563</td>
</tr>
<tr>
<td>Pain</td>
<td>0 (0–100)</td>
<td>0 (0–100)</td>
<td>0.564</td>
</tr>
<tr>
<td>Loss of appetite</td>
<td>0 (0–83.3)</td>
<td>0 (0–83.3)</td>
<td>0.672</td>
</tr>
<tr>
<td>Dyspnea</td>
<td>0 (0–100)</td>
<td>0 (0–100)</td>
<td>0.138</td>
</tr>
<tr>
<td>Sleep disturbance</td>
<td>33.3 (0–100)</td>
<td>33.3 (0–100)</td>
<td>0.866</td>
</tr>
<tr>
<td>Constipation</td>
<td>0 (0–100)</td>
<td>0 (0–66.6)</td>
<td>0.313</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>33.3 (0–100)</td>
<td>0 (0–100)</td>
<td>0.321</td>
</tr>
<tr>
<td>Financial strain</td>
<td>0 (0–100)</td>
<td>33.3 (0–100)</td>
<td>0.447</td>
</tr>
<tr>
<td>Loss of body weight</td>
<td>0 (0–100)</td>
<td>0 (0–100)</td>
<td>0.498</td>
</tr>
<tr>
<td>Fever or shivering</td>
<td>0 (0–33.3)</td>
<td>0 (0–100)</td>
<td>0.503</td>
</tr>
<tr>
<td>Jaundice</td>
<td>0 (0–33.3)</td>
<td>0 (0–66.6)</td>
<td>0.518</td>
</tr>
<tr>
<td>Bloating</td>
<td>0 (0–100)</td>
<td>16.65 (0–100)</td>
<td>0.916</td>
</tr>
<tr>
<td>Thirst</td>
<td>0 (0–100)</td>
<td>0 (0–100)</td>
<td>0.785</td>
</tr>
<tr>
<td>Itching</td>
<td>0 (0–66.6)</td>
<td>0 (0–100)</td>
<td>0.381</td>
</tr>
<tr>
<td>Treatment strain</td>
<td>33.4 (0–100)</td>
<td>50 (0–100)</td>
<td>0.746</td>
</tr>
<tr>
<td>Hope and confidence</td>
<td>83.4 (0–100)</td>
<td>66.7 (0–100)</td>
<td>0.051</td>
</tr>
</tbody>
</table>

*Scores range from 0 to 100, with a higher score representing a higher degree of symptoms, items corresponding to questionnaire.\(^4\)
Surgery in Chronic Pancreatitis

- Indicated for failure of medical management
- Suspicion of malignancy
- Drainage procedure
  - Indicated in large duct disease
- Resection-drainage procedure
  - Indicated when there is an inflammatory mass
  - Procedure of choice dictated by surgeon experience and individualized to patient
Ranson's Criteria on Admission:

- age greater than 55 years
- a white blood cell count of > 16,000/µL
- blood glucose > 11 mmol/L (>200 mg/dL)
- serum LDH > 350 IU/L
- serum AST > 250 IU/L

Ranson's Criteria after 48 hours of admission:

- fall in hematocrit by more than 10 percent
- fluid sequestration of > 6 L
- hypocalcemia (serum calcium < 2.0 mmol/L (<8.0 mg/dL))
- hypoxemia ($P_{O_2}$ < 60 mmHg)
- increase in BUN to > 1.98 mmol/L (>5 mg/dL) after IV fluid hydration
- base deficit of > 4 mmol/L

The prognostic implications of Ranson's criteria are as follows:

- Score 0 to 2: 2% mortality
- Score 3 to 4: 15% mortality
- Score 5 to 6: 40% mortality
- Score 7 to 8: 100% mortality