Diverticulitis

Michael Klein, MD
SUNY-Downstate Medical Center
April 30, 2015
xx with abdominal pain

2 weeks duration, a/w anorexia

No other symptoms
PMHx

asthma, HTN
c-section

Meds: prednisone 20, ASA, HCTZ, amlodipine
Exam

99.3  101/60  145  20
Previously hypotensive, responded to 2L IVF

AAOx1
LLQ tender with localized rebound/guarding
<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBC</td>
<td>23/9/29/175</td>
</tr>
<tr>
<td>Bands</td>
<td>29</td>
</tr>
<tr>
<td>Chemistry</td>
<td>134/5.5/97/13/47/1.5/156</td>
</tr>
<tr>
<td>Lactate</td>
<td>10.7</td>
</tr>
<tr>
<td>BD</td>
<td>13</td>
</tr>
<tr>
<td>UA</td>
<td>neg</td>
</tr>
<tr>
<td>BCx</td>
<td>neg</td>
</tr>
</tbody>
</table>
Operative Procedure

laparoscopic drainage of contained diverticular abscess, peritoneal lavage

Findings:
  retroperitoneal diverticular abscess
  no free perforation

JP drains x2: 1 retroperitoneal, 1 pelvic
Hospital Course

POD #0

- Remained intubated
- Normotensive
- Vancomycin/zosyn/flagyl
- Heparin 5000U q8h started

POD #1

- b/l LE edema. Venous duplex (+)DVT b/l LE
- Heparin gtt started
Hospital Course

POD #2

Abscess cx GPC, GNR -- abx switched to zosyn/linezolid
Persistent tachycardia
Hospital Course

POD #3

Repeat CTAP: no collection
Hospital Course

POD #6

Extubated
Retroperitoneal JP drainage feculent
Abscess cx results: pan-sensitive E. coli, B. fragilis
Hospital Course

POD #7

Persistent dehydration, oliguria
Respiratory failure, reintubation
Hospital Course

POD #8

Anion-gap metabolic acidosis
Hypotension despite 3 pressors
Operative intervention

exploratory laparotomy, drainage of contained interloop abscess, diverting colostomy

POD #9

Persistent acidosis, hypotension
Irreversible septic shock
Patient expired
Diverticulitis

Current Controversies in Management
Diverticulitis

Current Controversies in Management
Diverticulae

- Presumed to be caused by pulsion
- False diverticulae
- Most common in sigmoid colon

Pathogenesis

● Inflammation or infection associated with diverticula

● Likely occurs from obstruction of the diverticulum
Complicated vs. Uncomplicated

Uncomplicated: simple inflammation

Complicated: presence of (free) perforation, obstruction, fistula or abscess
# Hincheey Classification

<table>
<thead>
<tr>
<th>I</th>
<th>Confined pericolic abscess</th>
</tr>
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<tbody>
<tr>
<td>II</td>
<td>Pelvic or retroperitoneal abscess</td>
</tr>
<tr>
<td>III</td>
<td>Purulent peritonitis without free rupture</td>
</tr>
<tr>
<td>IV</td>
<td>Free rupture, feculent peritonitis</td>
</tr>
</tbody>
</table>

[downstatesurgery.org](http://www.downstatesurgery.org)
# Management

<table>
<thead>
<tr>
<th>I</th>
<th>Confined pericolic abscess</th>
<th>Antibiotics +/- percutaneous drainage</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Serial abdominal exams</td>
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<tr>
<td>II</td>
<td>Pelvic or retroperitoneal abscess</td>
<td>Antibiotics + percutaneous drainage</td>
</tr>
<tr>
<td>III</td>
<td>Purulent peritonitis without free rupture</td>
<td>Antibiotics, laparotomy*</td>
</tr>
<tr>
<td>IV</td>
<td>Feculent peritonitis, free rupture</td>
<td>Antibiotics, laparotomy, Hartmann’s procedure</td>
</tr>
</tbody>
</table>
Primary Anastomosis or Hartmann’s Procedure for Patients With Diverticular Peritonitis? A Systematic Review

Leon Salem, M.D.,¹ David R. Flum, M.D., M.P.H.¹²

¹ Department of Surgery, University of Washington, Seattle, Washington
² Department of Health Services, University of Washington, Seattle, Washington
## Hartmann’s vs. PRA

<table>
<thead>
<tr>
<th></th>
<th>Mortality</th>
<th>Anastomotic leak</th>
<th>Permanent stoma</th>
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</thead>
<tbody>
<tr>
<td><strong>HP (R)</strong></td>
<td>18.8 (19.6%)</td>
<td>HPR 4.3%</td>
<td>HP 50-80%</td>
</tr>
<tr>
<td><strong>PRA</strong></td>
<td>9.9%</td>
<td>PRA 13.9%</td>
<td></td>
</tr>
<tr>
<td><strong>Wound infections</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HP (R)</strong></td>
<td>24.2 (29.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRA</strong></td>
<td>9.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stoma-related complications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*HP*, Hartmann’s procedure; *R*, reversal; *PRA*, primary resection-anastomosis.
Operative Strategies for Diverticular Peritonitis

A Decision Analysis Between Primary Resection and Anastomosis Versus Hartmann’s Procedures

Vasilis A. Constantinides, MBBS,* Alexander Heriot, FRCS,* Feza Remzi, MD,†
Ara Darzi, FRCS, KBE,* Asha Senapati, FRCS,‡ Victor W. Fazio, MD,† and Paris P. Tekkis, FRCS*†

<table>
<thead>
<tr>
<th></th>
<th>Quality-adjusted life years (QALYs)</th>
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<tbody>
<tr>
<td></td>
<td>Single operation</td>
</tr>
<tr>
<td>HP</td>
<td>12.51</td>
</tr>
<tr>
<td>PRA</td>
<td>9.18</td>
</tr>
<tr>
<td>PADS</td>
<td>11.66</td>
</tr>
</tbody>
</table>
Laparoscopic peritoneal lavage for generalized peritonitis due to perforated diverticulitis

E. Myers¹, M. Hurley², G. C. O’Sullivan³, D. Kavanagh¹, I. Wilson² and D. C. Winter¹

¹Institute for Clinical Outcomes Research and Education at Saint Vincent’s University Hospital, Dublin, in association with ²Department of Surgery, Saint Luke’s Hospital, Kilkenny and ³Department of Surgery, Mercy University Hospital, Cork, Ireland

Correspondence to: Mr D. C. Winter, Department of Surgery, Saint Vincent’s University Hospital, Elm Park, Dublin 04, Ireland
(e-mail: winterd@indigo.ie)
Fig. 1 Management pathway of 100 patients undergoing laparoscopic assessment and management of perforated diverticulitis with generalized peritonitis.
### TABLE 1: Reported experience with laparoscopic irrigation and drainage in Hinchey stage II and stage III diverticulitis

<table>
<thead>
<tr>
<th>Author, year</th>
<th>N</th>
<th>Resolution</th>
<th>Mortality</th>
<th>Morbidity</th>
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<tbody>
<tr>
<td>Taylor CJ, 2006</td>
<td>14</td>
<td>79%</td>
<td>–</td>
<td>3*</td>
</tr>
<tr>
<td>Myers E, 2008</td>
<td>92</td>
<td>87%</td>
<td>3%</td>
<td>3 (abscess)</td>
</tr>
<tr>
<td>Karoui M, 2009</td>
<td>35</td>
<td>97%</td>
<td>–</td>
<td>1 (Hartmann’s)</td>
</tr>
<tr>
<td>White SL, 2010</td>
<td>35</td>
<td>77%</td>
<td>–</td>
<td>8†</td>
</tr>
<tr>
<td>Afshar S, 2012†</td>
<td>301</td>
<td>–</td>
<td>0.3%</td>
<td>19%</td>
</tr>
</tbody>
</table>

*Three patients did not show improvement and underwent acute resection.
†Perforated cancer (1), fecal fistula (2), inadequate washout and ongoing sepsis (5).
†Collected results from 12 studies.
Old, New, and back to Basics?

3-stage (44% mortality)
(1) Diversion
(2) Resection
(3) Anastomosis

Hartmann’s procedure (2-stage, 8.8-20% mortality)
(1) Perforectomy with end colostomy
(2) Reversal

Miles Procedure (38% mortality)

1-stage (9.9% mortality)
Primary resection-anastomosis

2-stage (mortality: ?)
(1) PADS
(2) Reversal

1-stage (0.3-3%)
Laparoscopic drainage/lavage
FIGURE 2 Risk assessment and strategies for management of colonic diverticulitis. CAD, coronary artery disease; DM, diabetes mellitus; HP, Hartmann procedure; HTN, hypertension; MOF, multi-organ failure; PRA, primary resection anastomosis. (From Bauer VF: Emergency management of diverticulitis, Clin Colon Rectal Surg 22(3):161–168, 2009.)


