Diverticulitis

Arend Merrie
“Clarity and certainty are essentials to surgeons in training, at least until they discover that clarity is not enough and certainty does not exist.”

The Life of Hugh Owen Thomas 1956.
Mr David Le Vay MS, FRCS
Diverticulitis dogma

- Risk of developing >10%
- Nuts & seeds increase risk
- Treat with antibiotics
- Operate if free perforation
- Elective resection after two acute episodes
- Colonoscopy to exclude colon cancer
Overview

• Review evidence for dogma
• Review evidence for acute management
  – Antibiotics
  – Surgery
    • Lavage
    • Resection
  – High risk groups
Incidence

- Prevalence of diverticulosis
  - Increase with age
  - 5% 30-39yrs
  - 60% over 80yrs
- Risk of developing diverticulitis 1-4%
- 85% diverticulitis mild
- Incidence of perforation 3.5-4/100000/yr
Diet

- Health Professionals Follow Up study
  - 47,228 men
  - Inverse relationship between nut and popcorn consumption and development of diverticulitis
Diagnosis & assessment of severity

- Pain, tenderness, fever & raised CRP
- < 50 mild
- >150 higher likelihood of severe disease
- who needs CT?

**Fig. 2.** Flowchart of C-reactive protein values (expressed in mg/L) in patients with clinically mild and severe (complicated) disease.
Mild/uncomplicated diverticulitis

- CRP <150
- No abscess or fistula
Do all patients need antibiotics?

- **AVOD trial - Sweden**
  - [Graphs showing VAS score, temperature, and tenderness score over time after admission.]

- **Diabolo trial - Netherlands**
  - conservative vs liberal
  - ongoing

Chabok Br J Surg 2012
Do all patients need to be in hospital?

- DIVER trial - Spain
  - All treated with antibiotics
    - 1st dose in ED
  - No difference on outcome or QoL
  - Treatment cost 3 x lower in outpatient group
Treatment of complicated diverticulitis

- CRP > 150
- Abscess
- Perforation
- Hinchevy staging
  - Stage 1: Mesocolic / pericolic abscess
  - Stage 2: Pelvic abscess
  - Stage 3: Generalized peritonitis
  - Stage 4: Faecal peritonitis
Treatment of abscess

- Occur in 15-20% patients
- Percutaneous drainage effective in the majority
Treatment of perforation

- What constitutes perforation?

Not one entity
Treatment of perforation

• Laparotomy & lavage historical
  – 40% of op management for diverticular disease
    RACS prospective audit 1967

• Resection and end colostomy popularised in the 70’s
  – Hartman procedure
Laparoscopic Management of Generalized Peritonitis Due to Perforated Colonic Diverticula

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Adieu to Henri Hartmann?

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Laparoscopic peritoneal lavage for perforated colonic diverticulitis: a systematic review

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S. Afshar* and M. A. Kupke
Lavage series

- Heterogeneous group
  - 75% extent of peritonism recorded
  - 70% perforation by presence of free air
  - 24% abscess only (Hinchey I/II)
- LOS at best 9 days
- 51% patients elective resection
Lavage studies

- Ladies trial - Netherlands
  - LOLA – lap lavage or resection for purulent peritonitis
  - DIVA – Hartmann’s or primary resection and anastomosis for faeculent
- Trial closed due to high rate of reintervention in LOLA arm
Non-operative management?
Non-op management

**TABLE 1. Perforated diverticulitis CT grading system**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Localized free air (pericolonic) without abscess</td>
</tr>
<tr>
<td>2</td>
<td>Small (&lt;2 cm) collections of distant free air OR small (&lt;4 cm) abscess</td>
</tr>
<tr>
<td>3</td>
<td>Large (&gt;2 cm) collections of distant free air OR large (&gt;4 cm) abscess</td>
</tr>
<tr>
<td>4</td>
<td>Free air with nonloculated free fluid in the peritoneal cavity (feculent peritonitis)</td>
</tr>
</tbody>
</table>

**Diagram Flow**

- Perforated diverticulitis with free intraperitoneal air or abscess
  - Stable vitals
    - CT scan
      - Grade 1-3 perforation
        - Conservative management
      - Grade 4 perforation
        - OR for exploration
  - Unstable vitals
    - OR for exploration
Non-op treatment for complicated

- Dharmarajan DCR 2009
  - 91% successful
  - 27 pts with free air – 2 emergent op

- Costi Surg Endosc 2012
  - 39 pts with free air
  - 92% successful non-op management
  - Morbidity 40%

- Sallinen DCR 2014
  - 180 pts with free air, 132 non op managed
  - Pericolic air 99% success
  - Distant intraperitoneal air 62% success
  - Distant retroperitoneal 43% success
## Lavage vs non-op

<table>
<thead>
<tr>
<th></th>
<th>Lavage</th>
<th>Non-op</th>
</tr>
</thead>
<tbody>
<tr>
<td>IV Abs</td>
<td>All</td>
<td>All</td>
</tr>
<tr>
<td>LOS</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Emergency resection</td>
<td>5 %</td>
<td>5 %</td>
</tr>
<tr>
<td>Urgent resection</td>
<td>5 %</td>
<td>5 %</td>
</tr>
</tbody>
</table>
Faecal peritonitis/the unstable patient

- Multicentre RCT for Hinchey III and IV
- Hartmanns vs Primary resection
  - Study stopped at interim analysis
    - Significant differences
    - Low accrual rate
  - Mortality & morbidity NSD
  - Less serious complications
  - Shorter LOS
  - Lower in hosp cost
Need for elective surgery

- Risk of relapse 2% pa
- Relapsed cases
  - less likely to require operation
  - Lower mortality
High risk groups

- Immunocompromised
  - Higher rate of op mortality

Figure 2: Analysis of cumulative recurrence in patients with mild diverticulitis.

Figure 3: Analysis of cumulative recurrence in patients with severe diverticulitis.

Log Rank test p = 0.168
Log Rank test P < 0.001
Need for colonoscopy?

- Systematic review & meta-analysis
  - Cancer risk:
    - Uncomplicated 0.7%
    - Complicated 10.8%
Diverticulitis Dogma

- Risk of developing 10-25% ✗
- Nuts & Seeds increase risk ✗
- Treat with antibiotics ✗
- Operate if free perforation ✗
- Elective resection after two acute episodes ✗
- Colonoscopy to exclude colon cancer ✗
Summary

• Contemporary acute management
  – No antibiotics for mild disease
  – Outpatient management possible
  – Percutaneous drainage for abscess
  – Non-op management for perforated disease
  – Resection and primary anastomosis for Hinchey IV
  – No different treatment for high risk groups
He who works with his hands is a labourer
He who works with his hands and his head is a craftsman
He who works with his hands and his head and his heart is an artist

St Francis of Assisi (c1182-1226)