Non Operative Management of Perforated Duodenal Ulcers

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Case presentation

- 40 year old male presenting with abdominal pain:
  - Epigastric
  - Worsening over the last week
  - Radiating to the RUQ
  - H/o Abd pain for 7-8 years with intermittent use of amoxicillin and Tylenol
  - Denies: PMHx, PSHx, NKDA
Case Presentation

- **PE:**
  - T: 98.8 F
  - BP: 136/81
  - HR: 81
  - RR: 20
  - Abdomen: tender at the epigastric region.
    - + Guarding /+ Rebound

- **LABS:**
  - WBC: 5000
  - H/H: 14/44
  - Plat: 282
  - Amylase: 83  Lipase: 37
  - AST: 15, ALT: 12, ALP: 83, TBil: 0.4
Hospital Course

- Patient was treated conservatively
- NGT, PPI
- NPO.
- HD#1: UGI study: no leak.
- HD#4: discharged home.
Conservative Management of Perforated Duodenal Ulcers.

Taylor method: Antiquity or Reality
When a Duodenal Ulcer Perforates in the Peritoneal cavity there are three components of the resulting clinical syndrome that should be considered in developing a rational plan of treatment:

- Ulcer
- Perforation
- Peritonitis
The Ulcer
**H Pylori + DU**

- Urea breath test
- Serologic testing
- Bx + Histology: gold standard
- Eradication:
  - (-) organisms, by tissue sampling or breath tests, ≥ 1 month after the completion of treatment
H pylori plays a central role
High % of H pylori infections reported with perforated Duodenal Ulcers:

- Ng et al reported **80%** (58 of 73 case) of PDU were infected.  

- Tokunaga et al reported an H pylori infection in **92%** OF cases of PDU.  
  - Tissue density of infection:
  - Perforation > hemorrhage or obstruction.  
  *Tokunaga et al. Density of helicobacter Pylori infection in patients with peptic ulcer perforation Am Coll Surg. 1998;186;:659-663*

- Sebastian et al reported a positive radioactive C13 urea breath test in **24 of 29** cases of perforated duodenal ulcers.  
The Perforation
- Occurs in 2-5% of patient with ulcer disease
- Morbidity and Mortality: 5-10%
The first and mandatory obligation of the surgeon is to eliminate peritoneal soilage.

- Surgery

- Self-sealing of the perforation
  - achieved by adhesion formation to the caudate lobe, the greater omentum, the gallbladder or the falciform ligament.
History

- **1843**: Crisp was the first to describe the adhesion process formation.

- **1935**: Wangensteen reported the process of self sealing in 7 patients treated non surgically.

- **1946**: Taylor reported 28 cases of perforated ulcers treated with gastric aspiration, IVF, Serial Abdominal exams:
  - 24/28: uneventful recovery
  - 3 died from causes unrelated to the ulcer
  - 1 died from relation to the perforation

- **1950s**: Berne and Rosoff observed that a surgeon can be unblinded as to presence or absence of a spontaneous seal by performing a gastroduodenogram using a water-soluble contrast media.


*Taylor H. Peptic ulcer perforation treated without operation. Lancet. 1946;2:441-444*
Criteria of Spontaneous Sealing

- Filling of the Duodenum
- Demonstration of the ulcer
- Lack of spillage

☐ Lack of spillage in the absence of filling of the duodenum is not acceptable
Self sealing occurs in high frequency
Presence can be reliably established by Gastroduodenogram.
Secure.
Incidence of septic intra abdominal complication is low.

The Peritonitis
Continuous leak → bacterial peritonitis.

If perforation is self sealed, non surgical therapy can be instituted (NGT, ABX, PPI/H2 blockers).

Repeated physical exam is mandatory.

If no improvement of symptoms in 12h, self sealing should be questioned.
Major adverse effect of delay is: development of bacterial peritonitis.

Risk factors of death from perforated duo ulcer:
- Major medical illness
- Preoperative shock
- Longstanding perforation > 24 h

Randomized Controlled Trial

- 83 patients entered in the study
- 2 groups comparable age, comorbidities, duration perforation
- Diagnosis by clinical history:
  - sudden epigastric pain and rigid, tender upper abdomen on exam
- Free air on upright CXR in 71/83
- Trial observation n=40
- Immediate surgery n=43

Crofts T, et al. A randomized trial of nonoperative treatment for perforated peptic ulcer
New England Journal Medicine, 1989
Randomized Controlled Trial

- Conservative management
  - IVF resuscitation
  - NGT decompression
  - IV antibiotics
  - IV H2 blocker
  - UGIS
    - 38/40 patients had study

Randomized Controlled Trial

- Improvement
  - evaluated clinically
  - Decrease in Hr, Abd tenderness and temperature.
  - Advance in the general well being

- No improvement: OR
  - Simple patch repair
  - Vagotomy + pyloroplasty
  - Partial gastrectomy

- A randomized trial of nonoperative treatment for perforated peptic ulcer
  Crofts T, et al.
  New England Journal Medicine, 1989
Randomized Controlled Trial

- Observation group (n=40)
  - 29 successful
  - 11 failed
    - 3 gastric ca
    - 1 Sigmoid ca

- Surgery group (n=43)
  - Simple patch repair
  - Vagotomy pyloroplasty
  - Partial gastrectomy
## Randomized Controlled Trial

<table>
<thead>
<tr>
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<th>Non operative</th>
<th>Operative</th>
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<tbody>
<tr>
<td>Morbidity</td>
<td>50%</td>
<td>40%</td>
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<tr>
<td>Mortality</td>
<td>5%</td>
<td>5%</td>
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</table>

- *A randomized trial of nonoperative treatment for perforated peptic ulcer*Crofts T, et al.
  *New England Journal Medicine, 1989*
Prospective study

- Recent French study
- tried to determine the level of success and the predictive factors of failure of the conservative treatment:
- Dx based on:
  - HX of abdominal pain
  - Peritoneal signs
  - + pneumoperitoneum
- All patients received medical therapy:
- All received EGD: for evaluation of the ulcer and the study of h pylori.
- Clinical F/U Q 6 H: pain, HR, Peritoneal signs, fever
- No improvement in 24Hr → Surgery laparotomy or Laparoscopy.

*Songne et al. Non operative treatment for perforated peptic ulcer: results of a prospective study. Annales de chirurgie 2004;129;578-582*
Prospective study

- Both group compared to identify the predictors of failure of the medical treatment:
  - Hr, bp, abd pain, guarding, tenderness on rectal exam.
  - Size of the pneumoperitoneum.

Songne et al. Non operative treatment for perforated peptic ulcer: results of a prospective study. Annales de chirurgie 2004;129;578-582
<table>
<thead>
<tr>
<th>Conservative treatment</th>
<th>Statistics</th>
<th>Surgical Treatment</th>
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<tbody>
<tr>
<td>44 patients (54%)</td>
<td>X2</td>
<td>38 patients (46%)</td>
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<tr>
<td>Hospital stay</td>
<td>8 days</td>
<td>P=0.0017</td>
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<tr>
<td></td>
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<td>12.5 days</td>
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<tr>
<td>Size of the peritoneum</td>
<td>0.48±0.42</td>
<td>P&lt;0.01</td>
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<tr>
<td></td>
<td></td>
<td>0.88±0.6</td>
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<tr>
<td>HR</td>
<td>83</td>
<td>P&lt;0.02</td>
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<tr>
<td></td>
<td></td>
<td>105</td>
</tr>
<tr>
<td>Abdominal distension</td>
<td>42%</td>
<td>P&lt;0.02</td>
</tr>
<tr>
<td></td>
<td></td>
<td>72%</td>
</tr>
<tr>
<td>Tenderness on RE</td>
<td>15 (34%)</td>
<td>P&lt;0.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>21 (55%)</td>
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<tr>
<td>Age&gt;59 Y</td>
<td>14</td>
<td>P&lt;0.05</td>
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<td></td>
<td>22</td>
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Songne et al. Non operative treatment for perforated peptic ulcer: results of a prospective study. Annales de chirurgie 2004;129;578-582
Results

- 44/82 (54%): showed clinical improvement.
- 38/83 (46%): underwent surgery;
- 1% Global mortality: 1 patient died from septic chock.
- 11% Global Morbidity: 1 pt with intraabdominal abscess, 3 cases of abdominal wall abscess.

Songne et al. Non operative treatment for perforated peptic ulcer: results of a prospective study. Annales de chirurgie 2004;129;578-582
Predictors of medical failure:
- HR > 94
- Tenderness on RE
- Age > 59
- Size of pneumoperitoneum / Size of L1 > 1 → 60.5% failure

Surgical treatment in all cases.

Songne et al. Non operative treatment for perforated peptic ulcer: results of a prospective study. Annales de chirurgie 2004;129;578-582
An algorithm of suggested selective treatment of a duodenal ulcer that has perforated

Conclusion

- Approximately half of duodenal ulcers that perforate would have sealed when first seen by a physician.
- The perforation of a duodenal Ulcer that has sealed spontaneously can be treated non operatively with low morbidity, and mortality.
- Clinical criteria can help in patient selection.
- Randomized study is needed to confirm the results.