Perforated Peptic Ulcer: Where have we been? Where are we now?

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1st documented case: 167 BCE mummy from Western Han Dynasty

First Recorded Cases in Literature

• Clear description of clinical presentation
• Accurate description of gross pathologic findings

Crisp E. Cases of Perforation of the stomach with deductions there from relative to the character and treatment of the lesion. Lancet 1843;2:639

Report of 50 cases of perforated peptic ulcer

“Once the perforation has occurred, the case must be considered hopeless. In Surgery’s present state, the idea of cutting open the abdomen and closing the opening would be too quixotic to mention…”
Non-operative Treatment??

Conservative Therapy

• 80% of patients with contained perforation heal with conservative therapy
• Indications for surgical intervention
  – Increasing pneumoperitoneum
  – Deterioration of physical exam
  – Hemodynamic instability

Taylor H. Lancet 1946;2:841

Wangensteen OH. Minn Med 1935;18:477

Ann Surg 1979;189:627
Operative Management

“Every doctor, faced with a perforated ulcer...must consider opening the abdomen, sewing up the hole and...cleaning...the abdominal cavity”

J. von Mikulicz-Radecki.

Operative Management

- Plication of a perforated peptic ulcer – standard treatment after 1900
- “Graham “ omental patch described in 1937*
- Mortality rate after 1940 ranged from 2.9-10%**

*Graham RR. The treatment of perforated duodenal ulcers Surg Gynec Obstet 1937;64:235-238
**Booth RA, Williams JA. Br J Surg 1971;58:42
Concerns with Simple Closure

- Bleeding 28%
- Pyloric Stenosis 15%
- Repeat Perforation 9%


Definitive Ulcer Surgery

Von Rydigier

Pyloroplasty

Heinecke-Miculicz

Jaboulay

Physiology of Gastric Acid Secretion

- Neuronal
- Hormonal
Discovery of Gastrin

- 1905 John Edkins postulates the existence of “gastrin”
- 1938 Komarov demonstrates gastrin a unique antral stimulant
- 1955 ZE Syndrome described
- 1964 Gregory defines chemical structure of gastrin

Complications of Gastrojejunostomy

- Marginal Ulceration
- Gastro-jejuno-colic Fistula

“Definitive” Surgery for Peptic Ulcer Perforation?

- 1897 Braun - ulcer closure + gastrojejunostomy
- 1909 Dowden – ulcer closure + pyloroplasty
Gastric Resection Replaces Gastroenterostomy

Gastric Resection in Acute Gastro-duodenal Perforation: Analysis of 112 Cases

Dennis G. Cooley, M.D., Charles L. Jamieson, M.D., B. Leroy Rossman, M.D., and Kenneth E. Brodsky, M.D.

Ann Surg 1955;141:850

Gwen Wangensteen, MD
University of Minnesota
Chief of Surgery

Vagotomy and Antrectomy

Vagotomy and Antrectomy in the Treatment of Duodenal Ulcer

Dragstedt LR, Owens FM Jr.
Supradiaphragmatic Section of the vagus nerve in the treatment of duodenal ulcer.

Lester Dragstedt

Vagotomy and Antrectomy

Vagotomy and Antrectomy in the Treatment of Duodenal Ulcer

From the Department of Surgery, Vanderbilt University School of Medicine, the Edward Rose Clinic, and the W. Shelton Johnson Hospital, Nashville, Tennessee

Ann Surg 1959;150:499-513
**Acute Gastroduodenal Perforation**

*Comparative Study of Treatment With Simple Closure, Subtotal Gastrectomy, and Hemigastrectomy and Vagotomy*

GEORGE L. JORDAN, JR., MD; ROBERT T. ANGEL, MD; AND MICHAEL E. D'ANGELO, MD, HOUSTON

Arch Surg 1966;92:449

**Highly Selective Vagotomy**

Ann Surg 1982;196:338

**H-2 Blockers**

• 1964 SKF postulates 2 histamine receptors
• Designer Drug – Cimetidine – blocks H-2 receptor
• 1st marketed in 1976
• Ranitidine (Glaxo) marketed in 1981

**Protein Pump Inhibitors**

• 1st marketed in 1989
• Most potent inhibitors of Gastric Acid Secretion
• Largely Replaced H-2 Blockers
**Helicobacter pylori**

- 1982 discovered by Barry Marshall and Robin Warren in Perth Australia in the stomachs of patients with ulcers and gastritis
- To satisfy Koch’s postulates, Marshall drank a beaker of *H. pylori*, 10 days later was noted on endoscopy to have gastritis
- Biopsy: *H. pylori*

**Helicobacter pylori**

- 1987 Thomas Brody- Sydney Australia- developed “triple therapy” for peptic ulcer disease
  - PPI
  - Clarithromycin
  - Amoxicillin (or Flagyl)

**Laparoscopic or Open Repair?***

- Review of 56 articles 1989-2009
  - 3 RCT’s
  - 36 prospective or retrospective studies
  - 5 review articles
  - 3 technique articles
  - 12 “general” articles

### Laparoscopic or Open Repair?

- N=2788
- Conversion Rate 12.4%
- Most common reasons for conversion
  - Hole > 10 mm
  - Inadequate localization
  - Difficulty placing sutures
  - Shock on admission (50% conversion rate)
- Overall Mortality Rate: 5.4% (3.6% laparoscopy, 6.4% open)


### Laparoscopic or Open Repair?

- Complications (14.3% laparoscopy, 26.9% open)
  - Wound Infection (0% laparoscopy, 5% open)
  - Suture Leakage (6.3% laparoscopy, 2.6% open)


### Evidence Based Guidelines?

*I found none in the literature or in an internet search!!!*

### Schecter’s Approach to Perforated Peptic Ulcer Disease

- Consider diagnostic laparoscopy if the diagnosis is in doubt
- Open Graham Patch through a small supra-umbilical incision in thin patients—Laparoscopic Repair if you prefer
- Consider laparoscopic repair in obese patients
- Open repair in unstable patients
Schecter’s Approach to Perforated Peptic Ulcer Disease

• Add Highly Selective Vagotomy if
  – Recurrent ulcer disease
  – Long standing symptoms
  – Only if minimal contamination

• Graham Patch with post op “triple therapy” should be the standard treatment for almost all patients