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

Travers B. Med Chir Trans 1817;8:228-231

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??

CASE OF PERFORATING GASTRIC ULCER: PERITONITIS: RECOVERY.
By W. Winslow Hall, M.B., M.R.C.S., C.M., Surgeon to St. Thomas' Hospital for Children.

Lapse of recovery after perforation, due to perforating gastric ulcer, seems to be rare. I have been able to find record of only one case. Three of these were recorded as having completely recovered, while three died in the course of subsequent attacks, and the accuracy of the original diagnosis was verified by postmortem examination. In the following case recovery has apparently been complete and clinical and other symptoms indicate that it is so.

On a February 20th, which was divided into two parts by the hospital records, the patient's name could not be found. The case was considered as one of a myrmecophobia mania, which led to a neurotic condition. The case was admitted to case 3 of the St. Thomas' Hospital for Children on February 20th, 1935. The patient was a 15-year-old boy, of the name of John Doe, who had been admitted to another hospital on February 20th, 1935. The patient was transferred to the St. Thomas' Hospital for Children on February 20th, 1935. The patient was a 15-year-old boy, of the same name as John Doe, who had been admitted to another hospital on February 20th, 1935. The patient was transferred to the St. Thomas' Hospital for Children on February 20th, 1935.

Wangensteen OH. Minn Med 1935;18:477
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;2:441

Selective Treatment of Duodenal Ulcer with Perforation

ARTHUR J. DONOVAN, M.D., THOMAS L. VINSON, M.D., GILBERT D. MAULBEY, M.D., JAMES R. GERVIN, M.A.

Selective treatment of duodenal ulcer with perforation has been based on several premises: 1) The natural history of the ulcer following therapy of a perforation is generally favorably directed. 2) An upper gastrointestinal series with water-soluble contrast media can reliably document a spontaneously sealed perforation. 3) With a spontaneous seal, nonsurgical therapy is an acceptable option and is preferable for an acute ulcer or a chronic ulcer with poor surgical risk. 4) The treatment of choice for an isolated perforation of an acute ulcer is simple surgical closure. 5) The treatment of choice of perforation of a chronic ulcer with acceptable surgical risk is an elective definitive closure of the ulcer. 6) If the perforation is not sealed spontaneously within a reasonable period of time (i.e., 6 weeks), nonsurgical therapy was employed without complications in eight cases with radiologically documented spontaneous seal. Three patients recovering from a 30 cases of chronic and several ulcers in two cases were each without mortality. Four fatalities occurred among 13 cases of chronic and several ulcers, each with severe associated disease. The mortality was 28% among the 30 cases, 24% for chronic ulcer and 18% for acute ulcer.

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”

Theodor Billroth
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 Rydiger
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

Gastrectomy in Acute Gastrointestinal Perforation:
Analysis of 112 Cases*

D. Austin Glass, M.D., George L. Jordan, M.D., H. Lyman Brockman, M.D.,
and Michael E. DuBose, M.D.

Houston, Texas

From the Department of Surgery, Baylor University College of Medicine, and the surgical services of the
Veterans Administration, Jefferson Davis, and Methodist Hospitals, Houston, Texas.

Ann Surg 1955;141:850

Owen Wangensteen, MD
University of Minnesota
Chief of Surgery

Vagotomoy and Antrectomy

Vagotomy and Antral Resection in the Treatment of Duodenal Ulcer: *
Results in 514 Patients


From the Department of Surgery, Vanderbilt University School of Medicine, the Edward-Eye Clinic, and the Thayer Veteran's 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'AEKEY, MD, HOUSTON

Arch Surg 1966;92:449

Highly Selective Vagotomy

Immediate Definitive Surgery for Perforated Duodenal Ulcers

A Prospective Controlled Trial

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
Now possible to chemically block the cephalic and hormonal phases of gastric acid secretion

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!!!*

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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