BOWEL OBSTRUCTION

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DEFINITION

INTERRUPTION IN THE ABORAL PASSAGE OF INTESTINAL CONTENTS

Clinical Picture

- Colicky abdominal pain
- Abdominal distension
- Vomiting
- Decreased passage of stool or flatus
- Typical radiographic picture
  - plain AXR, contrast CT, UGI/SBFT, enteroclysis

Adynamic vs Mechanical Obstruction

Adynamic Ileus
- Gas diffusely through intestine, incl. colon
- May have large diffuse A/F levels
- Quiet abdomen
- No obvious transition point on contrast study
- Peritoneal exudate if peritonitis

Mechanical Obstruction
- Large small intestinal loops, less in colon
- Definite laddered A/F levels
- “Tinkling”, quiet= late
- Obvious transition point on contrast study
- No peritoneal exudate

Adynamic Ileus
Pathophysiology

- Hypercontractility--hypocontractility
- Massive third space losses
  - oliguria, hypotension, hemoconcentration
- Electrolyte depletion
- bowel distension--increased intraluminal pressure--impedement in venous return--arterial insufficiency

Important Questions

- Site
- Etiology
- Partial vs. complete
- Simple vs. strangulated
- Fluid & electrolyte status
- Operative vs. non-operative management

Site?
Small Bowel vs. Large Bowel

- Scenario
  - prior operations, Δ in bowel habits
- Clinical picture
  - scars, masses/ hernias, amount of distension/ vomiting
- Radiological studies
  - gas in colon?, volvulus?, transition point, mass
- (Almost) always operate on LBO, often treat SBO non-operatively

Etiology?

- Outside the wall
- Inside the wall
- Inside the lumen

Lesions Extrinsic to Intestinal Wall

- Adhesions (usually postoperative)
- Hernia
  - External (e.g., inguinal, femoral, umbilical, or ventral hernias)
  - Internal (e.g., congenital defects such as paraduodenal, foramen of Winslow, and diaphragmatic hernias or postoperative secondary to mesenteric defects)
- Neoplastic
  - Carcinomatosis, extraintestinal neoplasm
- Intra-abdominal abscess/ diverticulitis
- Volvulus (sigmoid, cecal)

Lesions Intrinsic to Intestinal Wall

- Congenital
  - Malrotation
  - Duplications/cysts
- Traumatic
  - Hematoma
  - Ischemic stricture
- Infections
  - Tuberculosis
  - Actinomycosis
  - Diverticulitis
- Neoplastic
  - Primary neoplasms
  - Metastatic neoplasms
- Inflammatory
  - Crohn's disease
- Miscellaneous
  - Intussusception
  - Endometriosis
  - Radiation enteropathy/ stricture
Intraluminal/ Obturator Lesions

- Gallstone
- Enterolith
- Bezoar
- Foreign body

Common Causes SBO- 1st World

- Adhesions
- Neoplasms
- Hernias
- Crohns
- Miscellaneous

60%
20%
10%
5%
5%

Common Causes of LBO

- Colon cancer
- Diverticulitis
- Volvulus
- Hernia

Unlike SBO, adhesions very unlikely to produce LBO

Causes of Adynamic Ileus

- Following celiotomy
  - small bowel- 24h, stomach- 48h, colon- 3-5d
- Inflammation e.g. appendicitis, pancreatitis
- Retroperitoneal disorders e.g. ureter, spine, blood
- Thoracic conditions e.g. pneumonia, # ribs
- Systemic disorders e.g. sepsis, hyponatremia, hypokalemia, hypomagnesemia
- Drugs e.g opiates, Ca-channel blockers, psychotropics

Partial vs Complete

- Flatus
- Residual colonic gas above peritoneal reflection /p 6-12h
- Adhesions
- 60-80% resolve with non-operative Mx
- Must show objective improvement, if none by 48h consider OR

- Complete obstipation
- No residual colonic gas on AXR
- SBFT may differentiate early complete from high-grade partial
- Almost all should be operated on within 24h

Is there strangulation?

- 4 Cardinal Signs
  - fever, tachycardia, localized abdominal tenderness, leukocytosis
- 0/4 0% strangulated bowel
- 1/4 7% “ “
- 2-3/4 24% “ “
- 4/4 67% “ “
- process accelerated with closed-loop obstr.
Management of Bowel Obstruction

NEVER LET THE SUN RISE OR FALL ON A PATIENT WITH BOWEL OBSTRUCTION

Principles

- Fluid resuscitation
- Electrolyte, acid-base correction
- Close monitoring
  – foley, central line
- NGT decompression
- Antibiotics controversial
- TO OPERATE OR NOT TO OPERATE

Resuscitation

- Massive third space losses as fluid and electrolytes accumulate in bowel wall and lumen
- Depend on site and duration
  – proximal- vomiting early, with dehydration, hypochloremia, alkalosis
  – distal- more distension, vomiting late, dehydration profound, fewer electrolyte abnormalities
- Requirements = DEFICIT + MAINTENANCE + ONGOING LOSSES

When is it safe NOT to operate?

- SMALL bowel obstruction if adhesions suspected etiology i.e. CANNOT have a “virgin” abdomen
- No signs of strangulation
- Adynamic ileus

Operative Indications

- Incarcerated or strangulated hernia
- Peritonitis
- Pneumoperitoneum
- Suspected strangulation
- Closed loop obstruction
- Complete obstruction
- Virgin abdomen
- LARGE bowel obstruction

Case 1

- 82yo man /c CHF and Hairy Cell Leukemia. Presents to the ER /c dx of appendicitis. Taken to the OR for uncomplicated laparoscopic appendectomy.
- POD #2 - progressive abdominal distention with postop ileus
- POD#3 - bilious emesis
  - afeb, nontender abd, wcc 5 (hcl)
Case 1

• POD#5 - Abdomen distended
  - High NGT output
  - No classic signs of strangulation

Outcome 1

• Taken to OR for laparoscopic exploration
  evening of POD#5
• Findings:
  – Suture at umbilical Hasson trocar site had
    broken (knot intact)
  – Richters hernia
  – Proximal bowel viable but congested
  – Peristalsis, doppler signal and Wood’s lamp all
    negative for ischemic injury

Case 2

• HPI: 60yo M s/p R hemicolectomy 9/99 for cancer.
  Presents to UWMC with 3d of intermittent crampy
  epigastric pain, distension, n/v. 3 “normal” BMs in 24
  hours.
• PE: T36.8 141/91 92 18
• Absent BS, soft, distended abdomen with periumbilical
  tenderness. No rebound or guarding. Guaiac negative.
  No palpable hernias. Well healed scars.
• Labs: WBC 15.7, Hct 48, HCO3 28 nl LFTs and amylase
  Negative UA
Outcome 2

- NGT placed, fluid resuscitated.
- Given high grade obstruction on AXRs, and leukocytosis patient taken to OR within 24 hours.
- On laparotomy, multiple dense adhesions found with tight band in retroperitoneum causing internal hernia/obstruction with a transition point. LOA performed, d/c’d to home on POD 10.

Case 3

- HPI: 79yo F with Parkinson’s dz and h/o breast cancer 20 yr ago presents to with 4d h/o n/v, distension. No abd pain. Reports recent bowel movement

- PE: Afebrile BP157/74 P89

- Labs: WBC 10.1 Hct 23.8 Cr 0.7 LFT’s wnl
Outcome 3

• Operative exploration given RUQ mass, abd CT obtained demonstrating distended small bowel and decompressed colon, with multiple masses in the RUQ and pelvis.
• On laparotomy, large RUQ mass involving multiple loops of small and large bowel, and mass in R pelvis requiring small and large bowel partial resections. Pathology lobular adenocarcinoma. Regained bowel function POD 5.

Case 4

• HPI: 3yo M presents to CHMC with 3 day h/o nonbilious, nonbloody emesis, abdominal pain, distension, decreased oral intake. Large loose stool AM of presentation.
• PE: T37.8 87/61 112 20
  - high pitched bowel sounds, distended, tympanitic abdomen, nontender, no rebound/ guarding. No palpable hernias. Stool guaiac negative.
• Labs: WBC 5.7  Hct 38.2  HCO3 21

Outcome 4

• Differential diagnosis in this age group includes: intussusception, appendicitis.
• Barium enema performed to look for intussusception, cecal abnormality

Outcome 4

• Redundant sigmoid mimicking small bowel; ileus likely secondary to gastroenteritis. D/C’d to home next day (enema decompressed patient)
Case 5

- 32 ym, former athlete in E. Germany
  - Ex lap for ruptured appendix 1997
  - Non-operative management partial SBO w/ resolution January 2002
  - Presents to ER four mos later w/ diffuse abdominal pain and distension
- PE: T 36.5, HR 75, mild periumbilical tenderness, no peritonism, midline scar, reducible LIH
- Labs: WCC 13.5, HCO₃ 25, other labs WNL

Outcome 5

- NGT placed
- Fluid resuscitated
- Non-operative management for 3 days
- Laparoscopic operative exploration with lysis of adhesions. No bowel compromise.
- Discharged POD #2 (HD #5)