

Acute Abdomen



Nirav Patel MD, FACS
Banner University Medical
Center - Phoenix



- Diffuse periumbilical with localization to RLQ
- + Nausea, anorexia, fevers
- - Diarrhea, emesis
- Exacerbated by movement, “bumps”
- Lo grade fever
- TTP with rebound RLQ: “McBurney’s point”, Rovsing’s sign.
- WBC: 12, UA: + leuckocytes



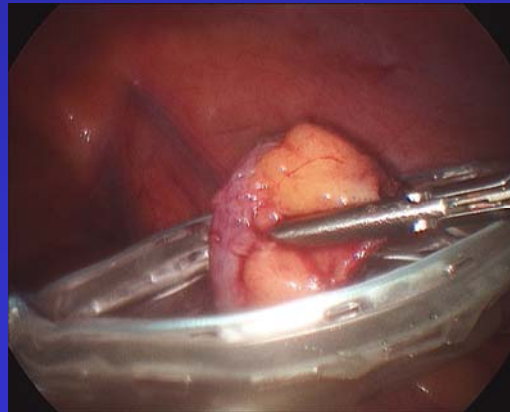
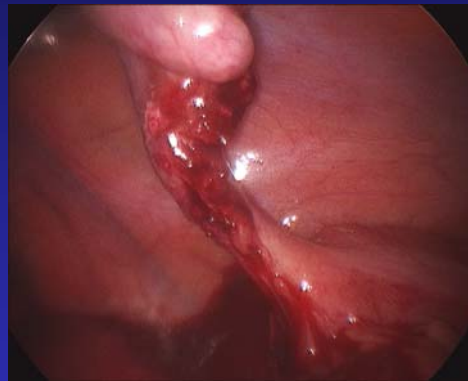
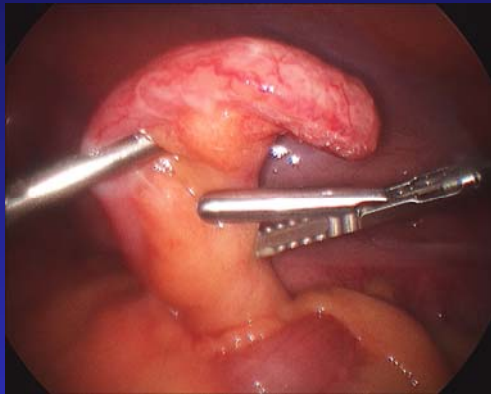
enlarged appendix
diameter = 12mm

minimal
peri-appendiceal
inflammatory change



Management

- Appendectomy: Open → Laparoscopic





Banner Health®

Patient Label



**Observation Emergency General
Surgery Preoperative [cs]
(Working IT version)**



Unspecified facility

ADMIT

- | | |
|--|-----------------------|
| <input checked="" type="checkbox"/> Place in Observation | T;N, Medical/Surgical |
| <input type="checkbox"/> ED Transition to OR/Outpatient | T;N, OR/Outpatient |

CODE STATUS

- | | |
|---|-----------------------|
| <input checked="" type="checkbox"/> Code Status | Code Status FULL, T;N |
|---|-----------------------|

ACTIVITY

- | | |
|---|-----|
| <input checked="" type="checkbox"/> Up Ad Lib | T;N |
|---|-----|

CONSENTS

- | | |
|--------------------------------------|--|
| <input type="checkbox"/> Consent For | T;N Laparoscopic Appendectomy, possible open |
| <input type="checkbox"/> Consent For | T;N Laparoscopic Cholecystectomy, possible intraoperative cholangiogram, possible open |
| <input type="checkbox"/> Consent For | T;N |
| <input type="checkbox"/> Consent For | Complete Consent for Blood Transfusion, Use approved paper consent form, T;N |

Non-operative management

- Several systematic reviews and metaanalyses compared the safety and efficacy of antibiotic treatment versus appendectomy for the primary treatment of uncomplicated, acute appendicitis:
- Patients treated with antibiotics had fewer major (4.9 versus 8.4 percent) or minor (2.2 versus 12.5 percent) complications compared with those who underwent surgery.
- Most patients assigned to the antibiotic-first approach were able to avoid appendectomy **initially**, although up to 53 percent of patients crossed over to surgery within the first 48 hours of antibiotic treatment.
- Patients in the antibiotic-first group had favorable clinical outcomes (including reduction in white-cell count avoidance of peritonitis and general symptom reduction)
- As compared with the appendectomy group, patients in the antibiotic-first group had lower or similar pain scores required fewer doses of narcotics and had a quicker return to work
- As compared with the appendectomy group, the rate of perforation was **not** higher in the antibiotic-first group.
- After initial treatment success, **10 to 37 percent** of the patients in the antibiotic-first group eventually required appendectomy for recurrent appendicitis or symptoms of abdominal pain (mean time to appendectomy, 4.2 to 7 months). A separate, observational study showed an overall recurrence rate of 13.8 percent in 159 patients treated initially with antibiotics then followed for two years
- Although high-risk patients (eg, older adults, immunocompromised, patients with medical comorbidities) could potentially benefit the most from nonsurgical treatment of appendicitis, they were excluded from all trials cited above. Thus, the efficacy of the antibiotic-first approach to management of appendicitis in this group of patients remains unknown.

Perforated Appendicitis

- Phlegmon: Antimicrobial therapy



- Abscess: perQ drainage



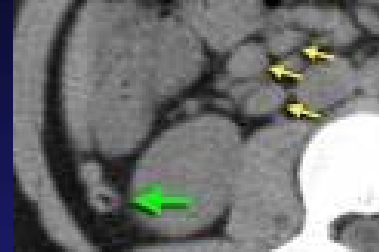
- Interval Appendectomy

Interval Appendectomy

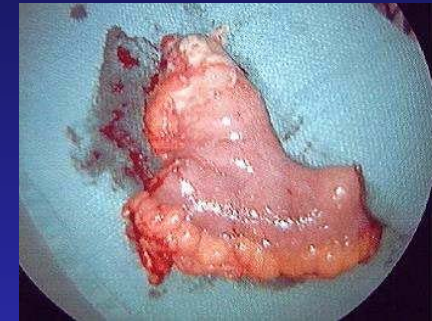
- **Traditionally**, an interval appendectomy has been recommended for these patients six to eight weeks after presentation for two primary reasons:
 - To prevent recurrence of appendicitis [8,66].
 - To exclude neoplasms (such as carcinoid, adenocarcinoma, mucinous cystadenoma, and cystadenocarcinomas) especially in older adults who have higher incidences of appendiceal neoplasm.
 - Patients (>50, appropriate family hx) should also have a colonoscopy to rule out cecal pathology.
- The need for interval appendectomy is **debated**:
 - A malignant disease was detected in 1.2 percent of cases and an important benign disease in 0.7 percent.
 - Recurrent appendicitis developed in 7.4 percent of cases (95% CI 3.7-11.1).

Fakeout!

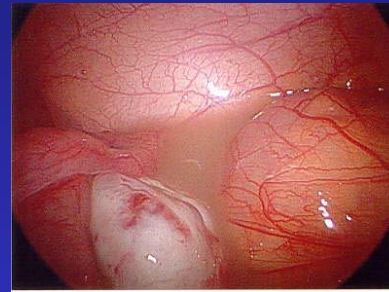
- Mesenteric adenitis: “gut flu”



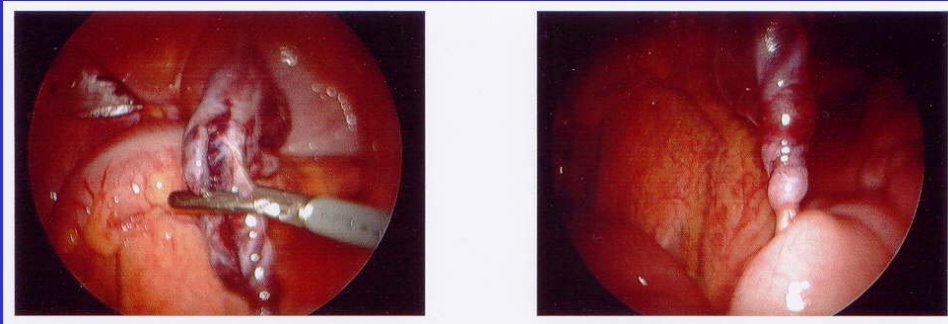
- Meckel’s diverticulitis: “Rules of 2”



- Tubo-ovarian pathology



- Infarcted appendiceal epiploicae



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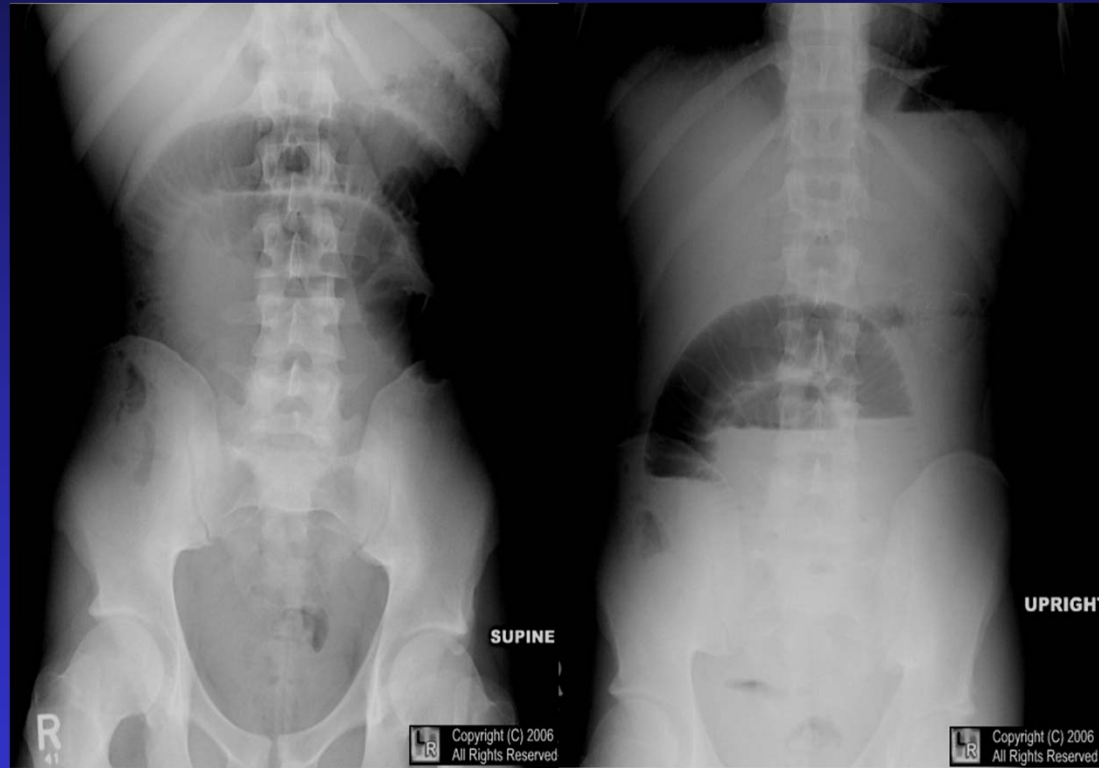
- 70 y/o woman with abdominal pain.
- Crampy , “waves”, “twisting”
- + Nausea, emesis.
- Intolerance of po intake
- - flatus, BM: small

- PSHX includes hysterectomy, appy.

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- VS: Afebrile, normotensive
- PE: distended, tympanitic, hi pitched BS.
Minimally TTP, no peritoneal signs
- WBC: WNL

Imaging



Where is the obstruction?

Proximal

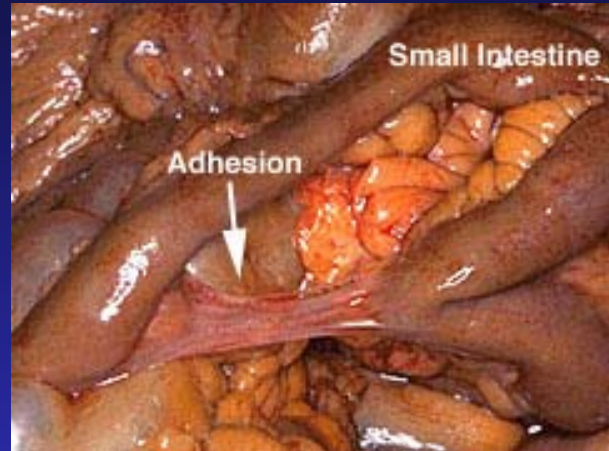
- Breath: **Bitter**
- Abdomen (Inspection): **Scaphoid**
- Abdomen (Auscultation): **Borborygmi**
- Abdomen (Palpation): **Variable**
- Abdomen (Percussion): **Dull**

Distal

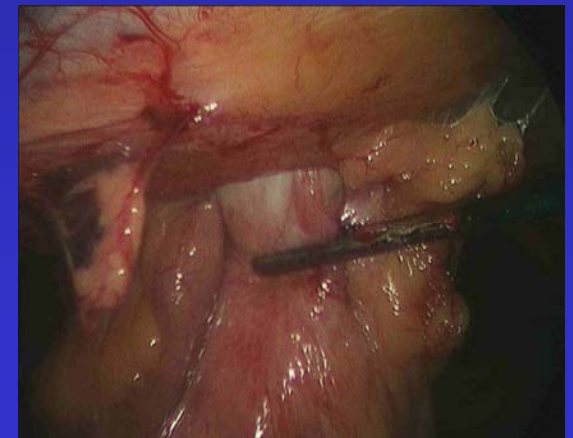
- Breath: **Feculent**
- Abdomen (Inspection): **Rotund**
- Abdomen (Auscultation): **Quiet**
- Abdomen (Palpation): **“Achy”**
- Abdomen (Percussion): **Tympanitic**

SBO: Etiology

- Adhesions

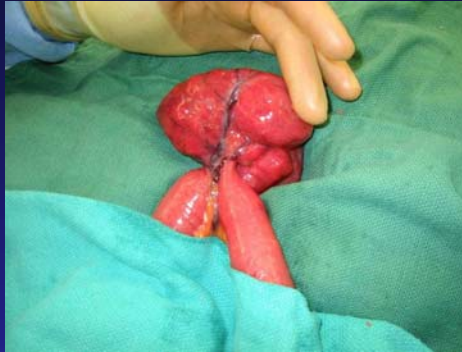


- Hernia



SBO: Etiology

- Malignancy



- Iatrogenic



Management

- Partial vs Complete
- Uncomplicated vs Complicated
 - Leukocytosis, acidosis, pneumatosis, free air



Partial Uncomplicated

- Non-operative management:
NPO, IVF, +/- NG decompression

90-95% resolution w/in 72 hours.

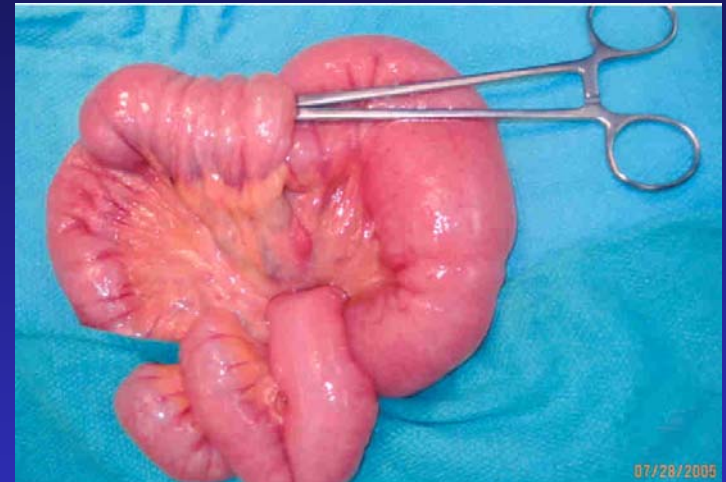
Gastrointestinal Secretions

Organ/ Fluid	Volume/ Day	Na (mEq/L)	K (mEq/L)	Cl (mEq/L)	HCO ₃ (mEq/L)
Plasma	--	140	4	103	24
Salivary	600	50	20	40	30
Stomach	1000	60*	10	130	--
Duodenum	2000	140	5	80	--
Pancreas	1000	140	5	75	100
Liver	500	145	5	100	25
Small Bowel	2000	140	5	70	50
Colon	Scant	60	70	15	30
0.9% NS	--	154	--	154	
Ringer's lactate	--	130	4	109	28**

* Also 60 mEq H⁺/L

**14 mEq/L converted to HCO₃⁻ by the liver

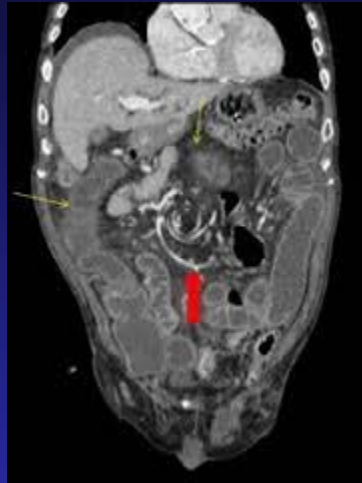
Refractory/Complete/ Complicated



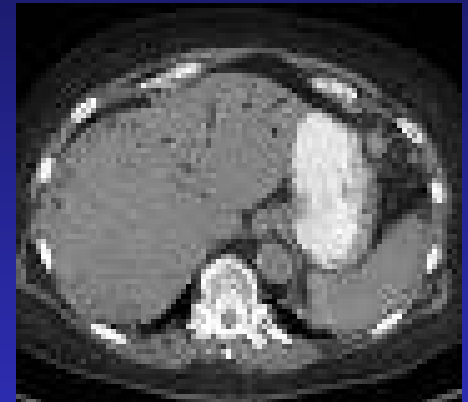
- Operative intervention:
 - Open
 - Laparoscopic

Refractory/Complete/ Complicated

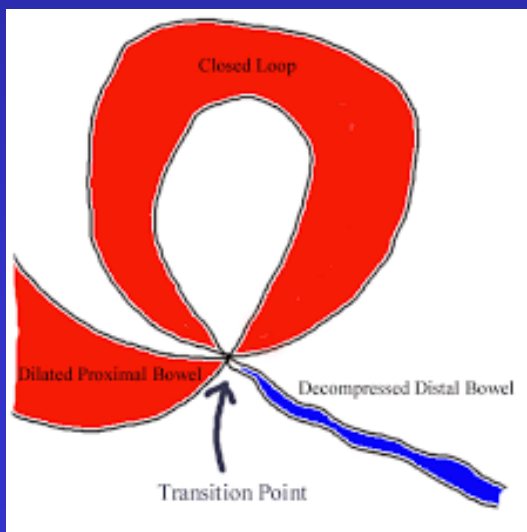
“Whirl” sign



Portal Venous air



Closed loop



When CT is Helpful

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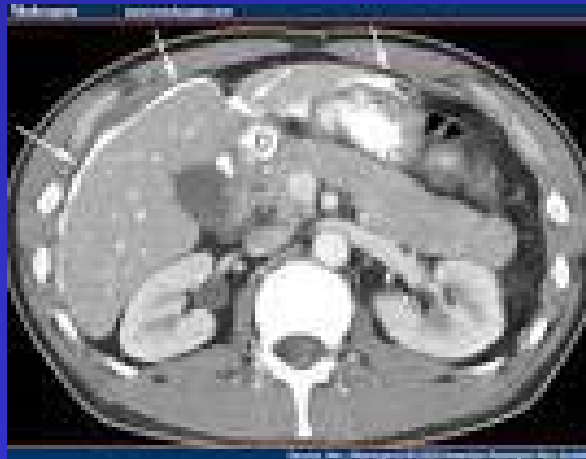
- 65yo M sudden onset of AP at 6pm
- Sharp, diffuse
- Exacerbated by movement, deep breaths
- + nausea, denies emesis

- Hx of recent NSAID use for hip pain

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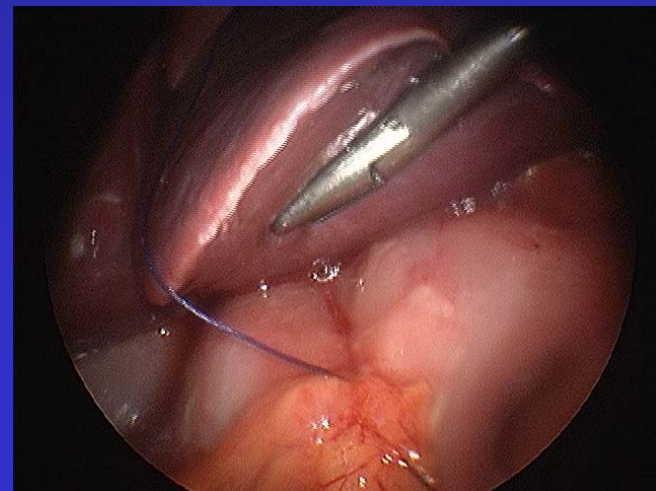
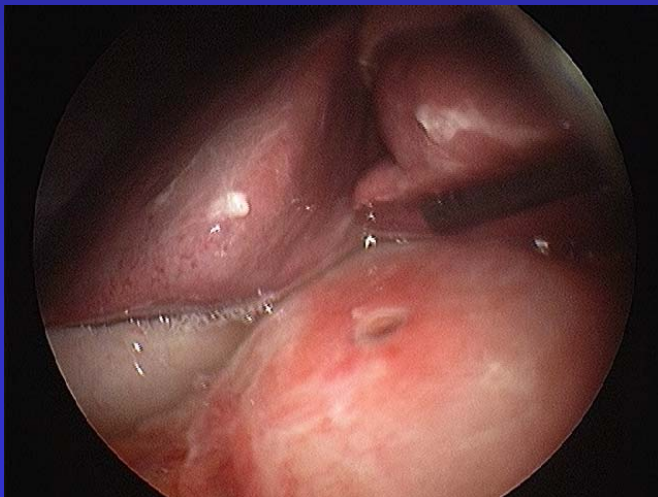
- Afebrile, hypotensive, tachycardic
- Distress
- Diffuse peritoneal findings

Imaging



Management

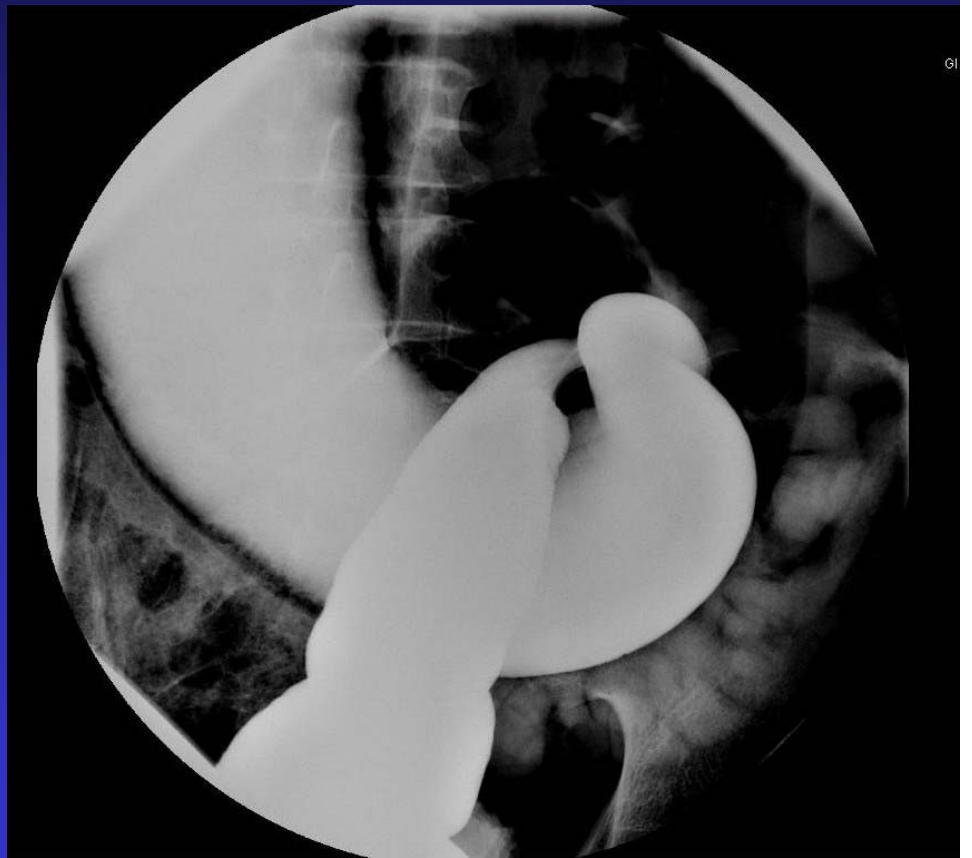
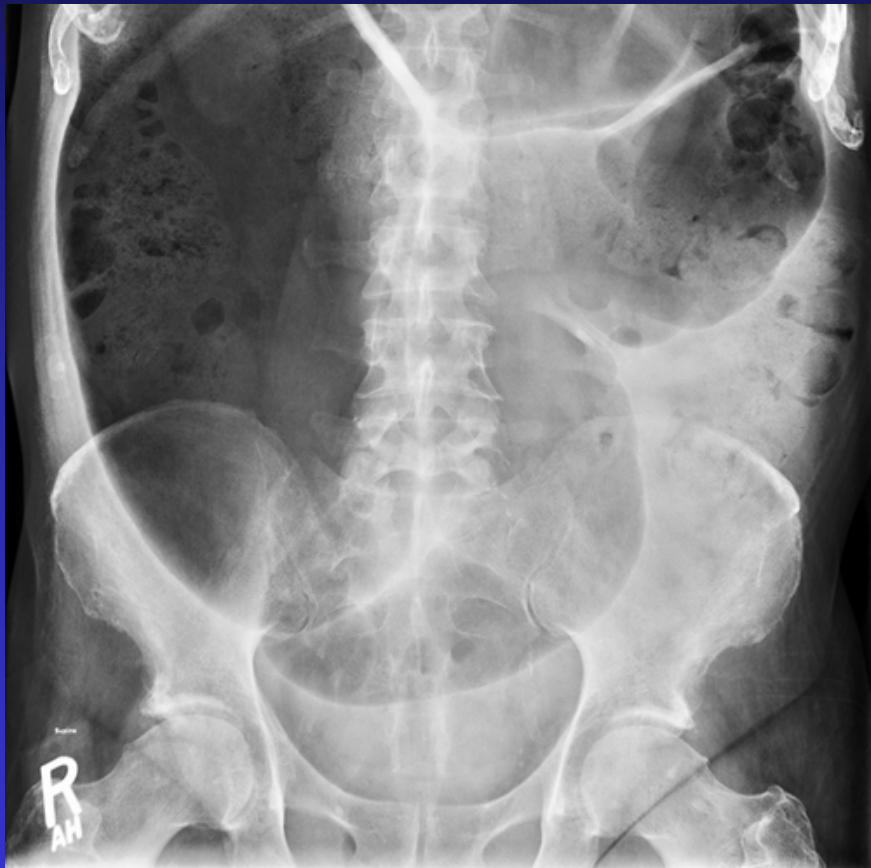
- IVF resuscitation, antimicrobial therapy,
- OR: Laparotomy → Laparoscopy



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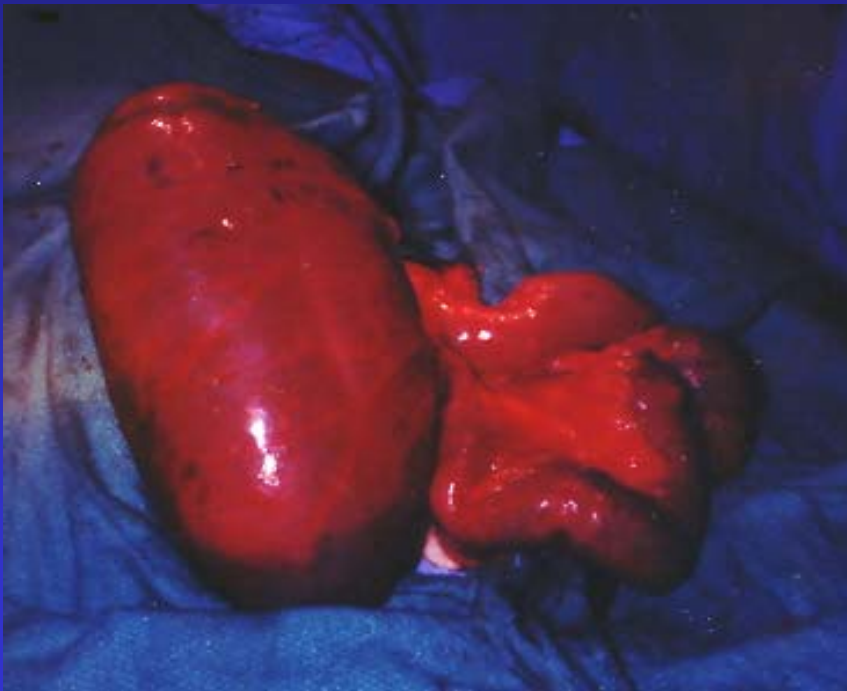
- Elderly nursing home resident brought in for progressive abdominal distension, nausea, anorexia. ? Flatus, No BMx 3days
- Relatively immobile, Multiple medications
- Afebrile, mild tachycardia
- Abd: significantly distended, tympanitic

Imaging



Management

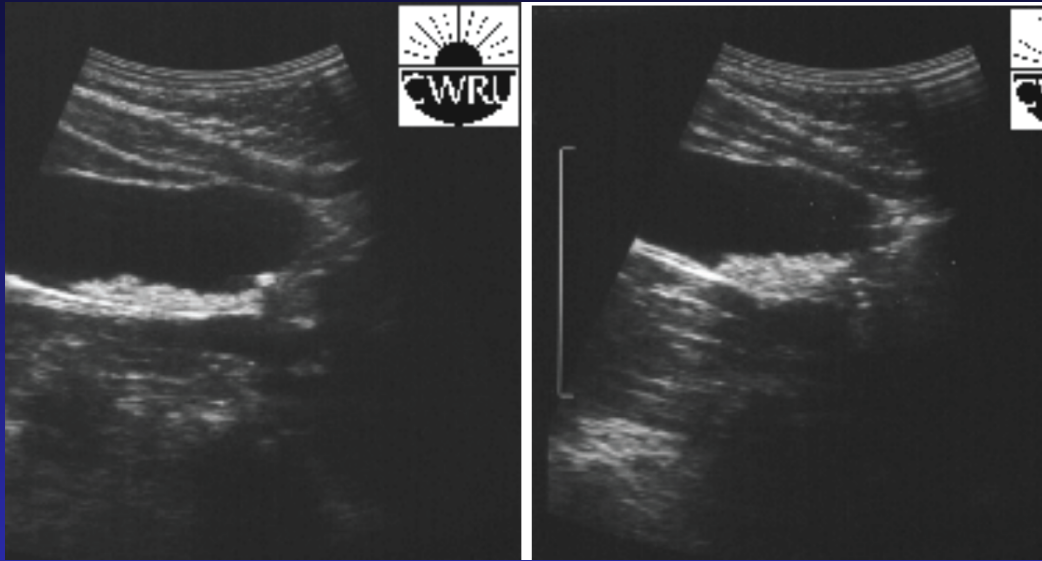
- Endoscopic decompression
- Open vs Laparoscopic sigmoid resection



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- 42yoF, awoken with epigastric discomfort
- Sharp, radiating around to her back on right
- + nausea, emesis
- Cheese pizza for dinner
- Lo grade temp, mildly tachycardic
- Moderate distress
- TTP epigastrium, RUQ, no peritoneal signs
- WBC, LFT :WNL
- Symptoms resolved with analgesia administration

Imaging



Natural History

- **Asymptomatic Stones**

- 5yrs 10% symptomatic (2%/yr)

- 10yrs 15% symptomatic

- 15yrs 18% symptomatic

- ***90% who become symptomatic initially have just biliary colic

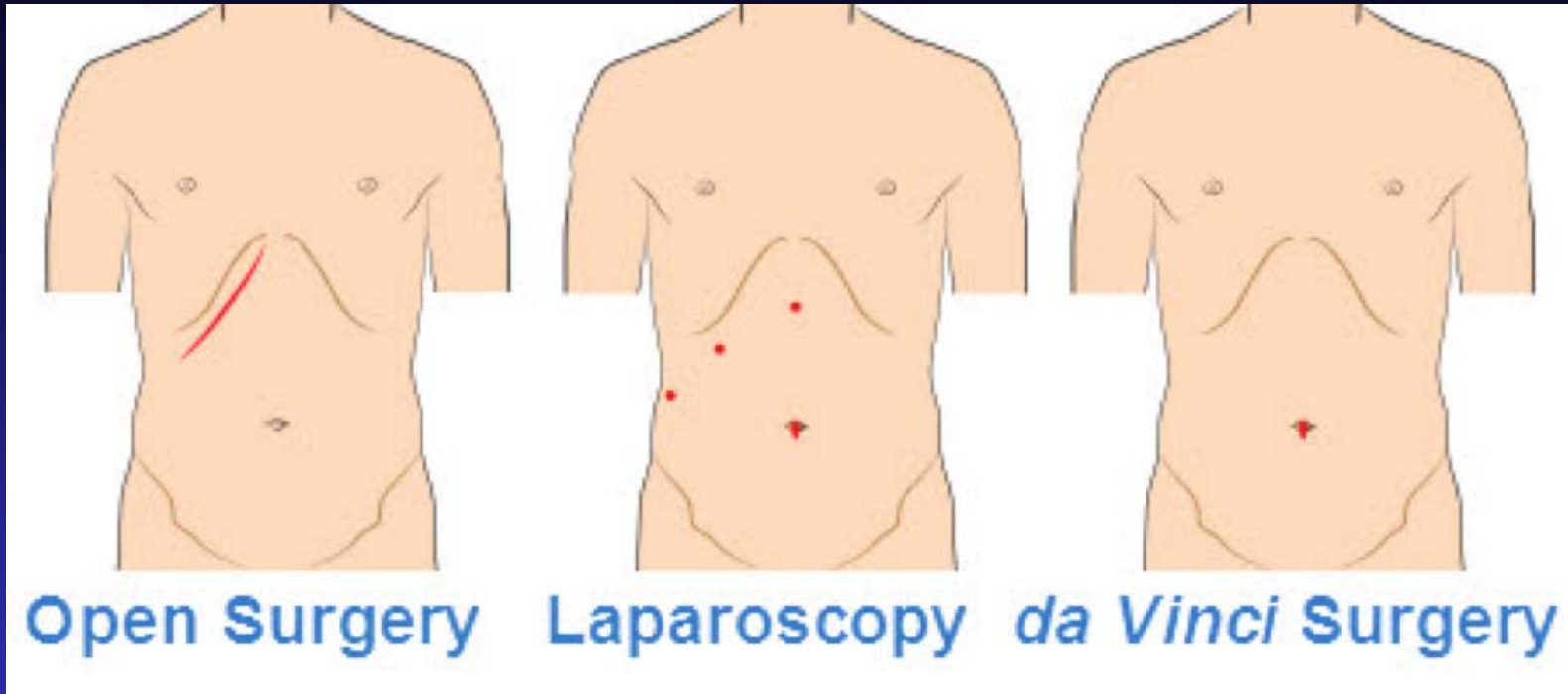
- Cholecystectomy not needed

- **Symptomatic stones**

- 50% develop recurrent sx

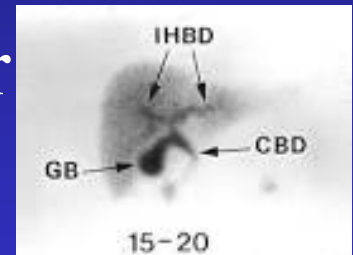
- 1-2%/yr develop complications of gallstone disease

Symptomatic Stones

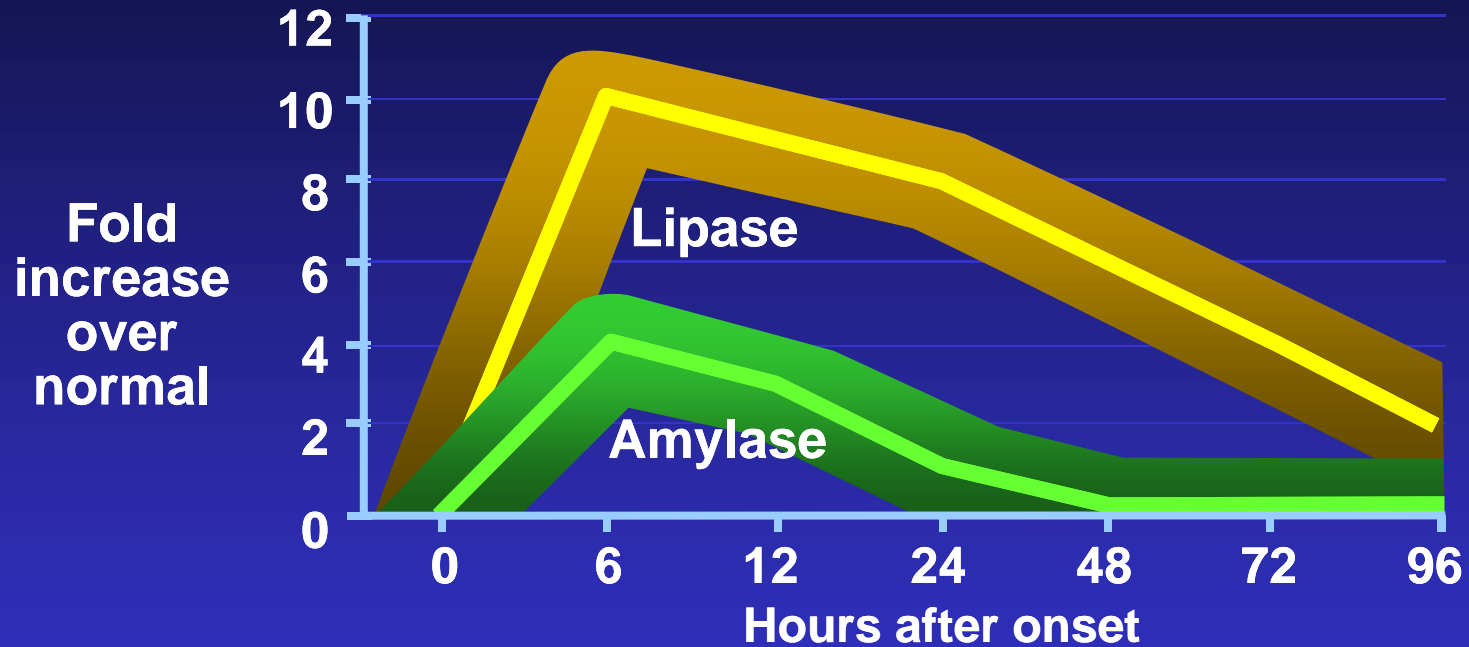


Acute Calculous Cholecystitis

- Lab: WBC, LFT
- US: Wall thickening ($>4\text{mm}$), pericholecystic fluid, sonographic Murphy's
- HIDA scan: No filling of gallbladder
- Immediate vs Interval Cholecystectomy
- PerQ Cholecystostomy tube placement



Biliary Pancreatitis



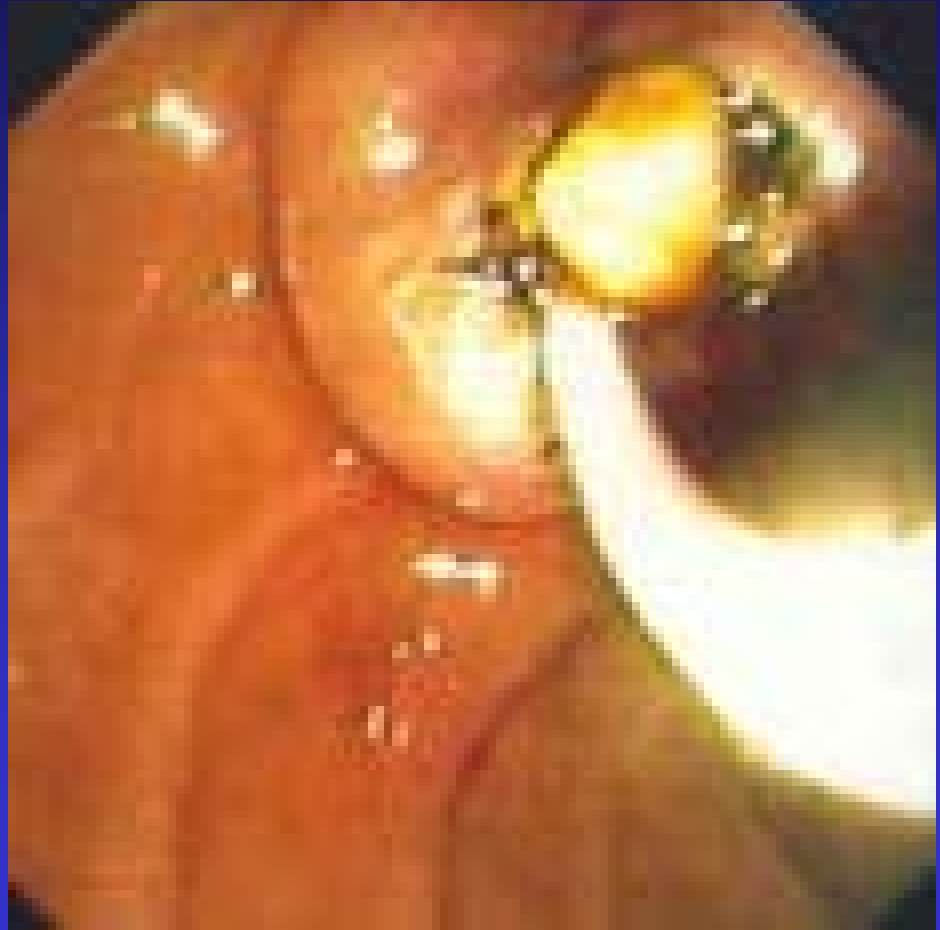
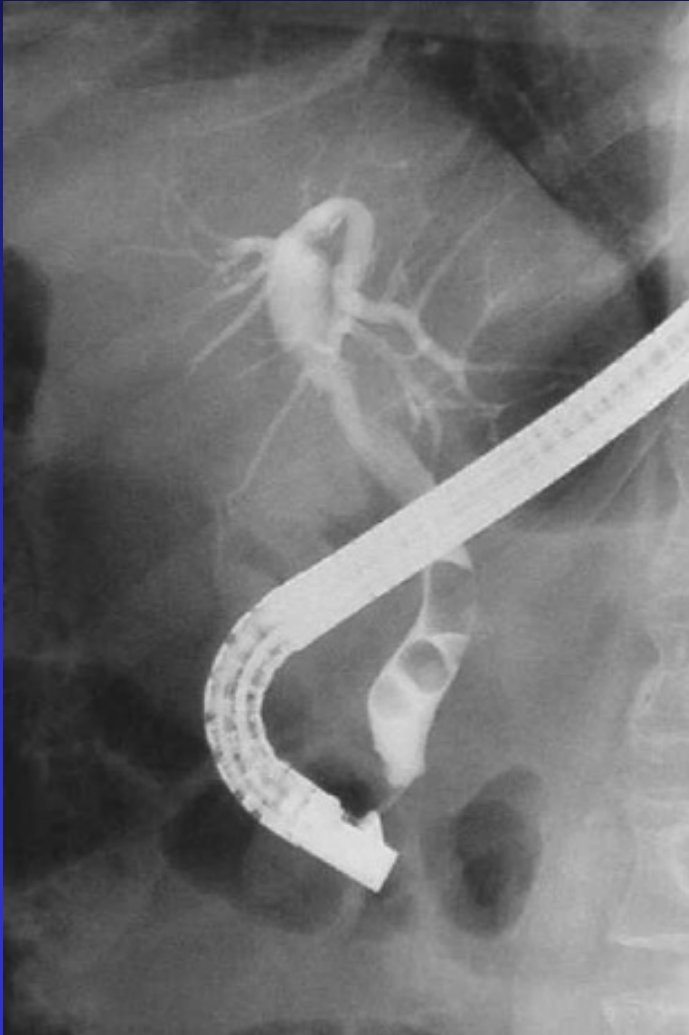
- Cholecystectomy during same hospitalization

Cholangitis

- Charcot's Triad: RUQ pain, Jaundice, Fever
- Reynold's Pentad: Hypotension, MS change
- Endoscopic, PerQ, Laparoscopic/Open decompression



Endoscopic



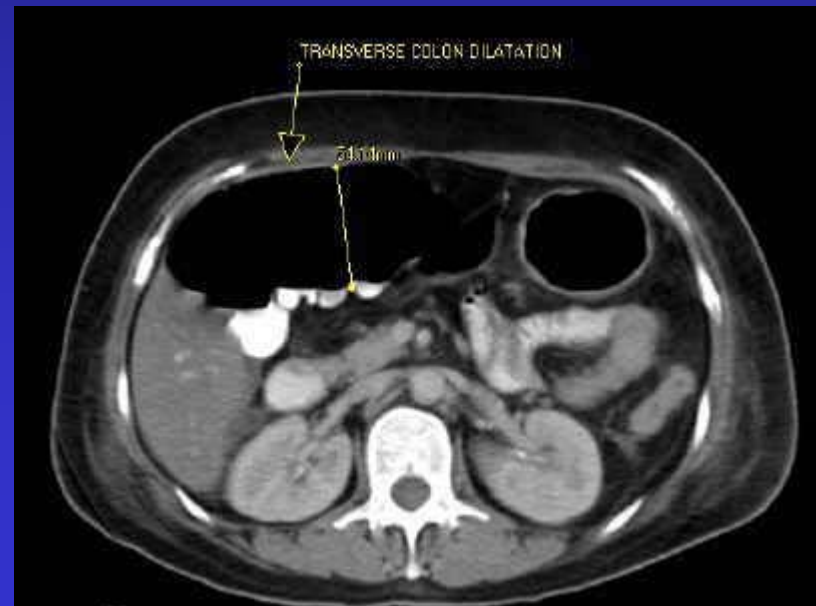
A 37 year-old woman is evaluated in the emergency department for the acute onset of pain after 2 weeks of bloody diarrhea.

?PMH/MEDS

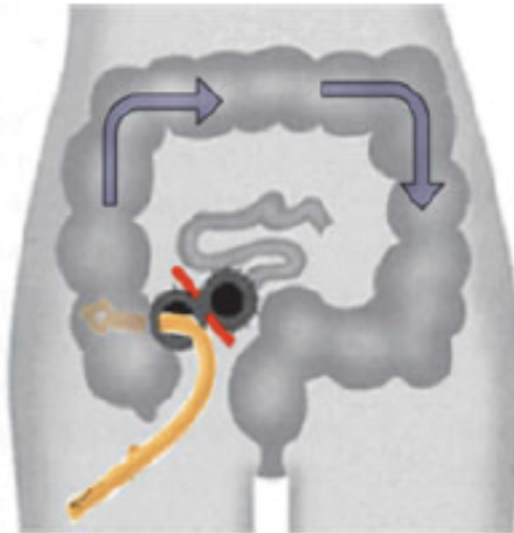
On physical examination, she appears ill, febrile, hypotensive, tachycardic and tachypneic. Abdominal examination discloses absent bowel sounds, distention, and diffuse marked tenderness with mild palpation.

Lab: WBC 19, Lactate 9.

XRay







1. Creation of diverting loop ileostomy.
2. Intraoperative antegrade colonic lavage with 8 liters of warmed PEG3350/electrolyte solution via ileostomy.
3. Postoperative antegrade colonic enemas with vancomycin (500 mg in 500 mL X 10 days) via ileostomy.

FIGURE 1. Operative treatment strategy for loop ileostomy and colonic lavage for severe, complicated *C. difficile*-associated disease. When possible laparoscopic exploration of the colon and abdominal cavity is performed and a diverting loop ileostomy is created. The colon is then lavaged in an antegrade fashion through the ileostomy with a high volume (8 L) of polyethylene glycol 3350 or balanced electrolyte solution and the effluent is collected via a rectal drainage tube. A catheter is placed in the efferent limb of the ileostomy to deliver vancomycin flushes in an antegrade fashion in the postoperative period.