A Case of Complicated Diverticulitis

Brian Clair

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Agenda

1. Introduction to Our Patient
2. Diverticulitis
   - -Review of Diverticular Disease
   - -Pathogenesis of Diverticulitis
   - -Radiologic Findings
   - -Treatment
3. Complications of Diverticulitis
4. Wrap-up of Our Patient

Our Patient: Mr. L

- 55 y/o male with a history of fevers, chills, right lower quadrant pain, pneumaturia, and passing stool in his urine.

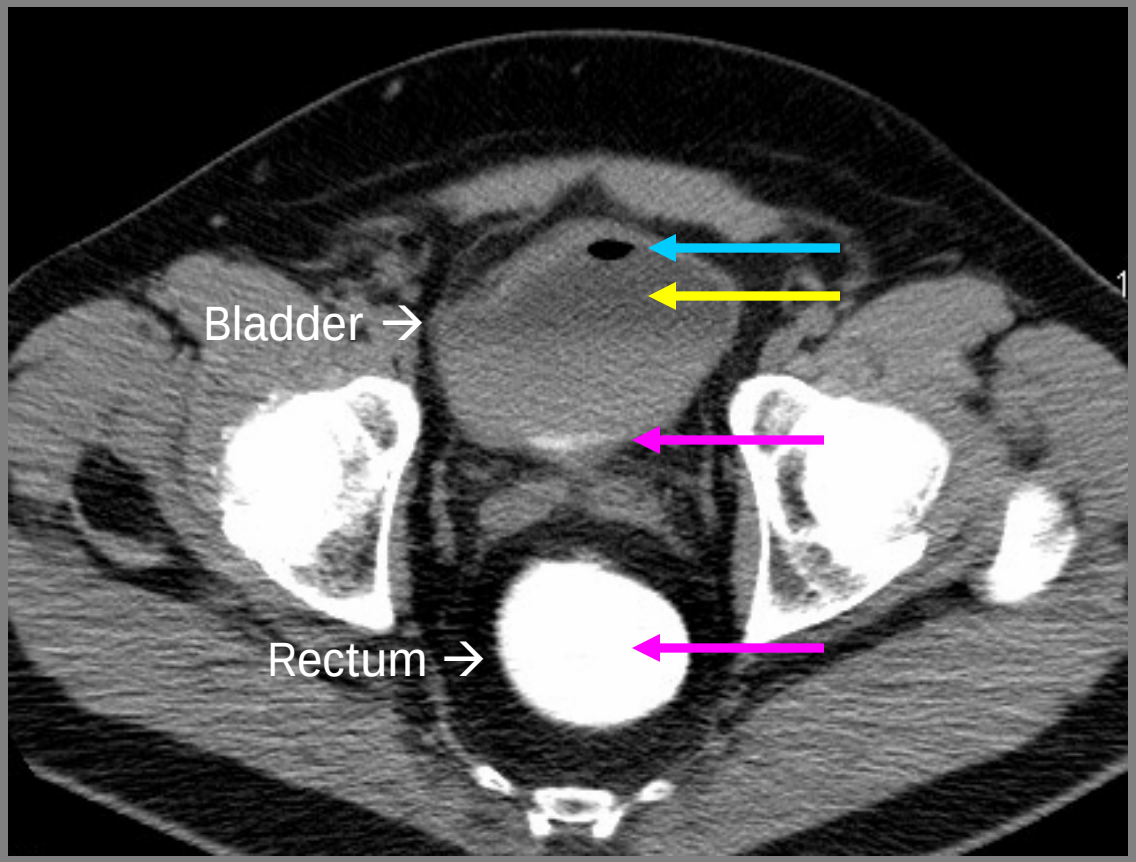
Differential Diagnosis of Pneumaturia (i.e. Air in the Bladder Lumen)

- **Air from the "outside"**
  - Iatrogenic
    - S/P cystoscopy
    - Suprapubic cystostomy
    - Foley catheter
    - Post-operative
  - Penetrating trauma
- **Air from the "inside"**
  - Enterovesical Fistula
    - Bladder cancer
    - Bowel cancer
    - Crohn's Disease
    - Diverticulitis
    - S/P radiation
    - TB
- **Air from gas forming organisms**
  - Emphysematous cystitis

CT is the primary imaging modality for suspected enterovesical fistulas.

Lieberman, G. "Male Imaging" Lieberman's Primary Care Radiology. http://eradiology.bidmc.harvard.edu

Mr. L: Enterovesical Fistula on CT



CT Pelvis. Rectal contrast without IV contrast.

BIDMC (PACS)

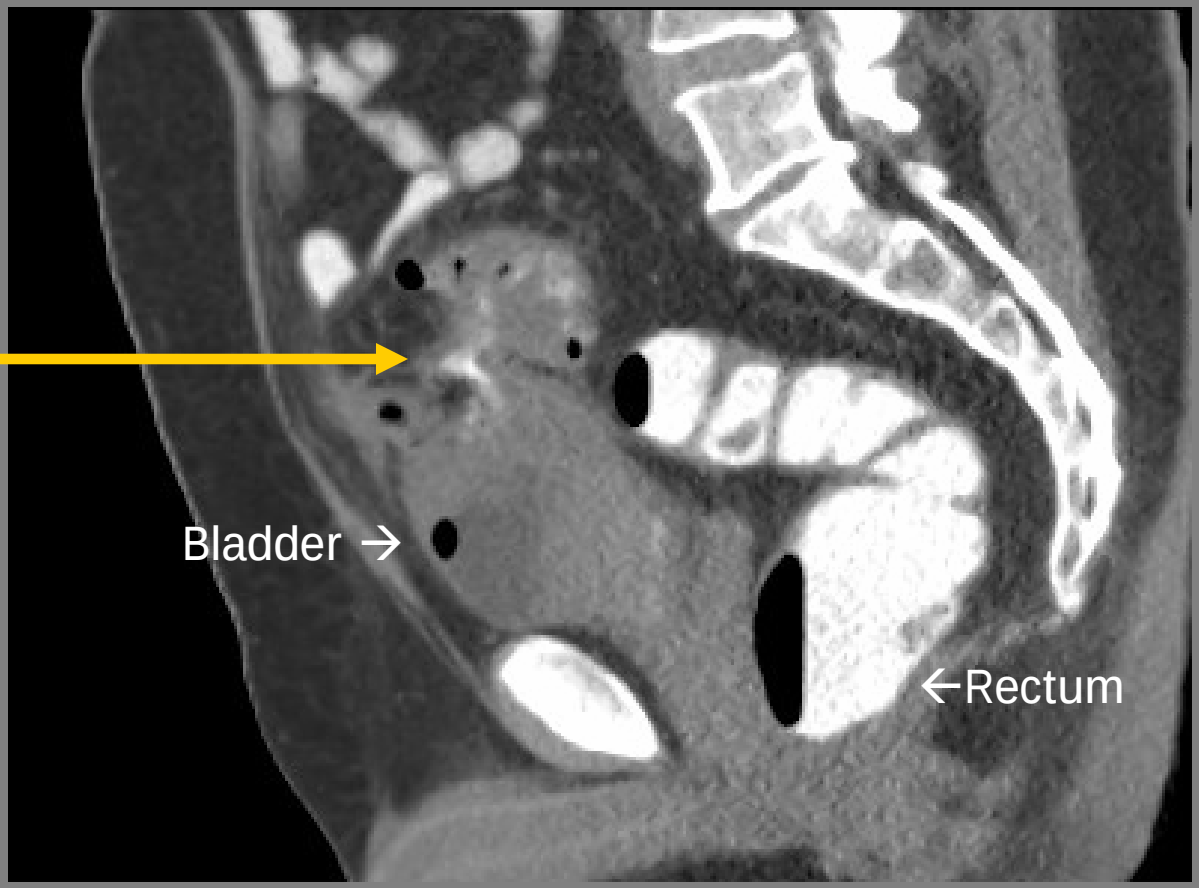
Air is present in the bladder above **urine** fluid level.

Contrast within the bladder.

Rectal **contrast** material administered without IV contrast is when enterovesical fistula is suspected.

Mr. L: CT Sagittal View

Communication between the sigmoid colon and the bladder

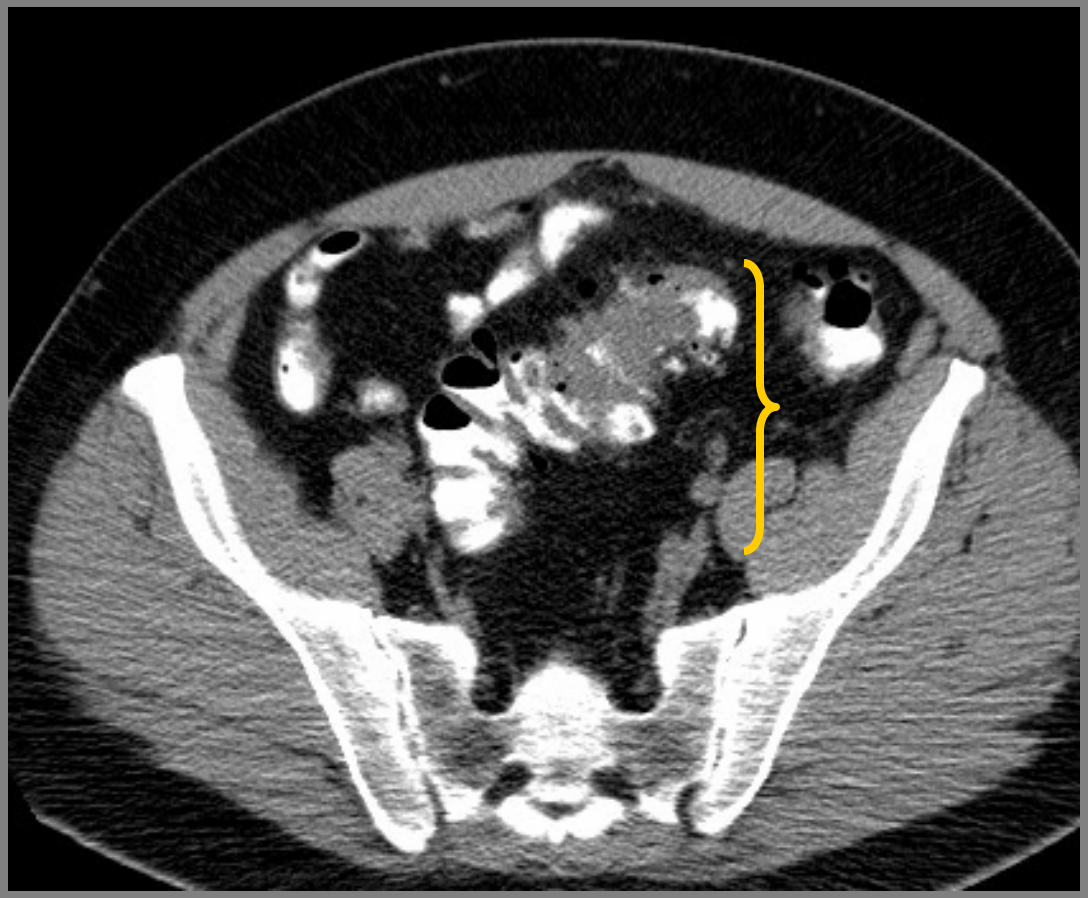


CT Sagittal Reconstruction. Rectal contrast without IV contrast. BIDMC (PACS)

Differential Diagnosis of Enterovesical Fistula

- Bladder cancer
- Bowel cancer
- Crohn’s Disease
- Diverticulitis
- S/P radiation
- TB

Mr. L: Sigmoid Diverticulitis on CT



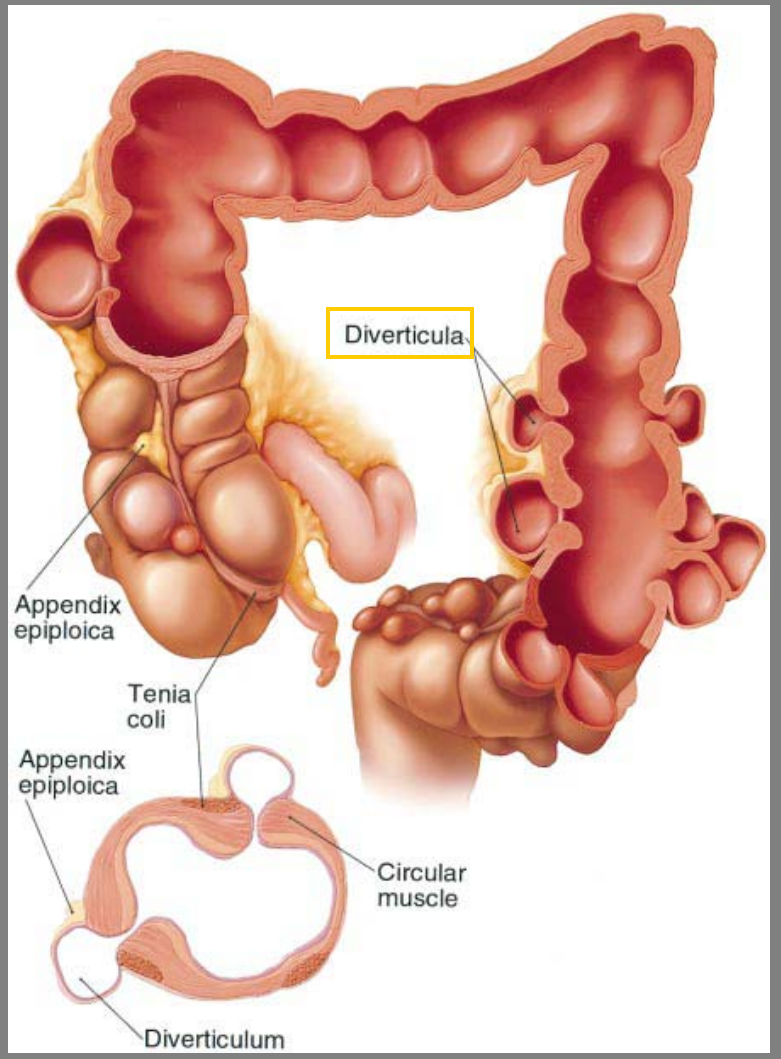
Mr. L: CT Pelvis. Rectal contrast without IV contrast.
BIDMC (PACS)

CT demonstrates diverticulitis of the sigmoid colon

How do we make this diagnosis?

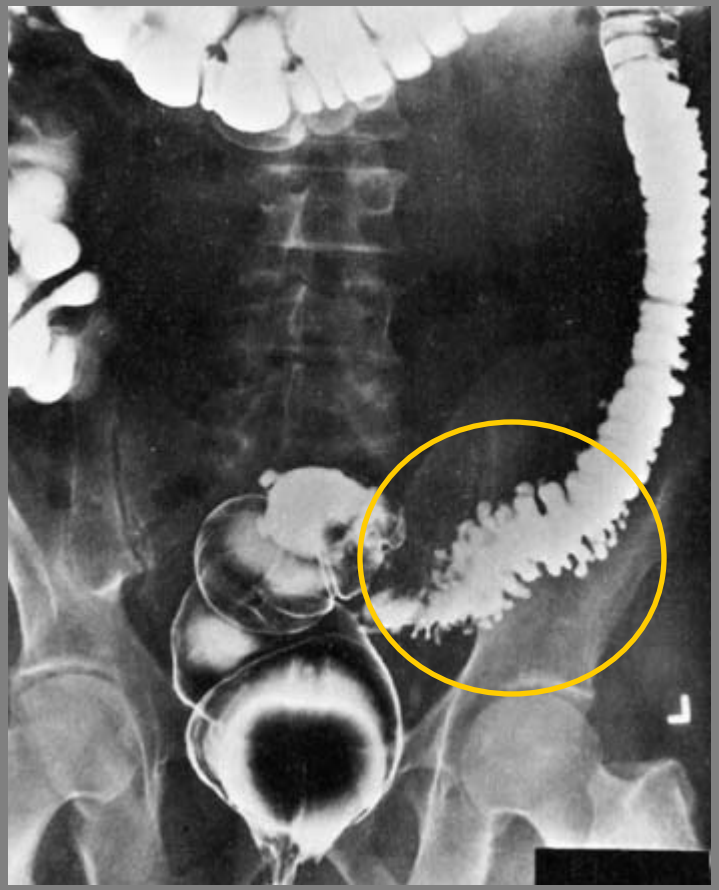
Diverticular Disease

- **Diverticula:** colonic outpouchings consisting only of mucosa and submucosa
  - Most commonly appear in the sigmoid colon
- **Diverticulosis:** describes presence of uninflamed diverticula
  - Incidence increases with age, from less than 5% before age 40 years to greater than 65% by age 85 years
- **Diverticulitis:** inflammation of a diverticulum or diverticula, commonly accompanied by gross or microscopic perforation
  - Estimated to occur in 10-15% of people with diverticulosis



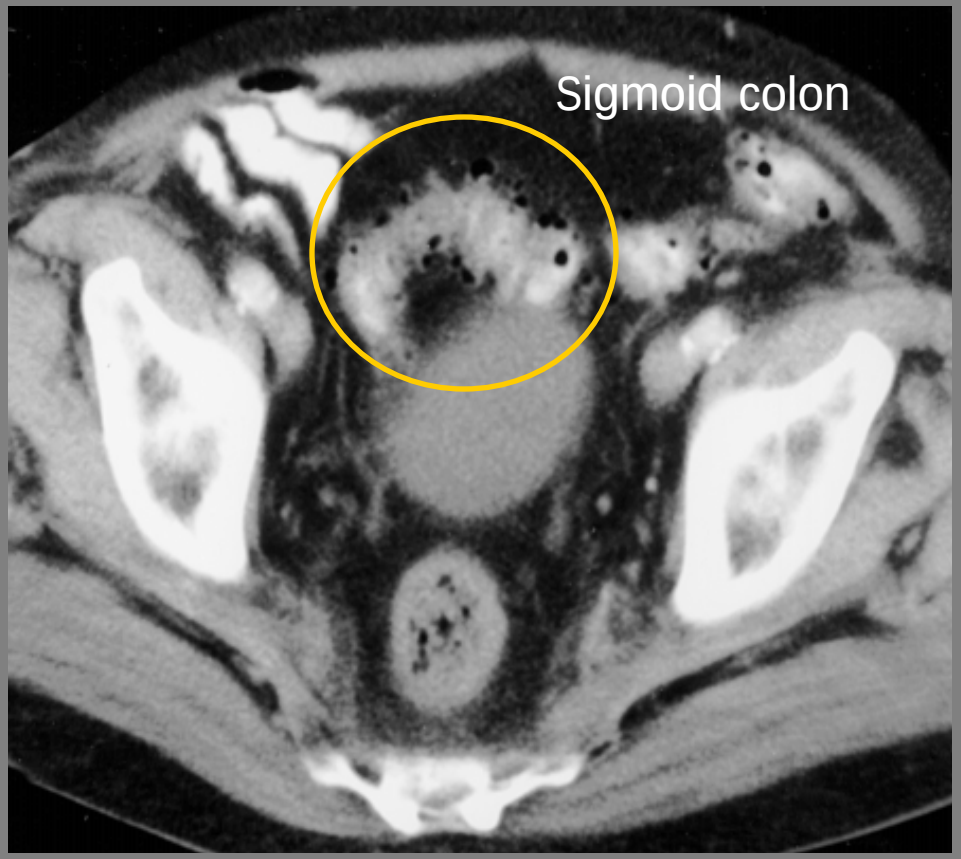
Horton KM, Corl FM, Fishman EK.

Imaging of Diverticular Disease



Source: Schwartz SI, Shires GT, Spencer FC (eds): Principles of Surgery. 5th ed. New York: McGraw-Hill, 1989, p 1256

Companion Patient #1
Barium Enema



Horton KM, Corl FM, Fishman EK.

Companion Patient #2
CT scan with oral and IV contrast material
Air-filled outpuchings = diverticula

Diverticulitis: Pathogenesis

Obstruction at neck of colonic diverticula by stool, inflammation, or food particles → Bacterial overgrowth, vascular comprimise and microperforation → Pericolic inflammation

Diverticulitis: Diagnosis

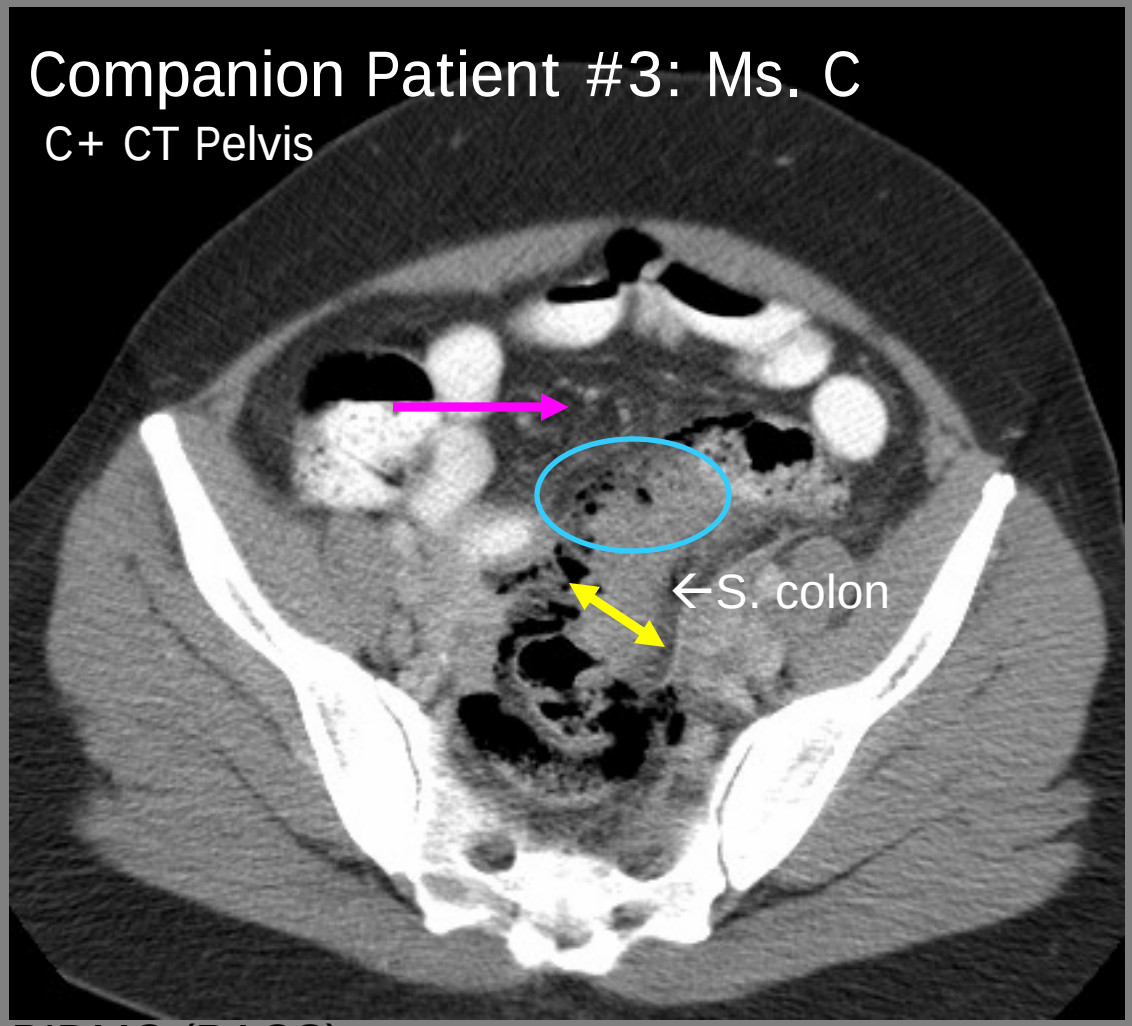
- Typical Presentation
  - Fever
  - Left lower quadrant abdominal pain
  - Leukocytosis

- Menu of Diagnostic Tests
  - **Barium enema**
    - Used in the past
  - **CT scan**
    - Most accurate and readily available imaging study in diagnosis of acute diverticulitis

Companion Patient #3: Uncomplicated Diverticulitis

CT Findings:

1. **Diverticula**
2. **Bowel wall thickening**
3. **Fat stranding**



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Diverticulitis: Complications

- Abscess
- Hemorrhage
- Stricture
- Fistula
- Phlegmon
- Purulent peritonitis
- Fecal peritonitis
- Perforation
- Obstruction

Complicated Diverticulitis: Staging by CT

Staging system used to classify severity of complicated diverticulitis

Stage	Modified Hinchey Classification	CT Findings
0	Mild clinical diverticulitis	Diverticuli ±colonic wall thickening
Ia	Confined pericolic inflammation/ phlegmon	Colonic wall thickening with pericolic soft tissue changes
Ib	Pericolic/mesocolic abscess	Ia changes + pericolic/mesocolic abscess
II	Pelvic, distant intraabdominal or retroperitoneal abscess	Ia changes + distant abscess (generally deep in the pelvis or in interloop regions)
III	Generalized purulent peritonitis	Free gas associated with localized or generalized ascites and possible peritoneal wall thickening
IV	Generalized fecal peritonitis	Same findings as III

CT-guided percutaneous drainage of abscesses larger than 4 cm in diameter

Emergency operative treatment

Baker ME.

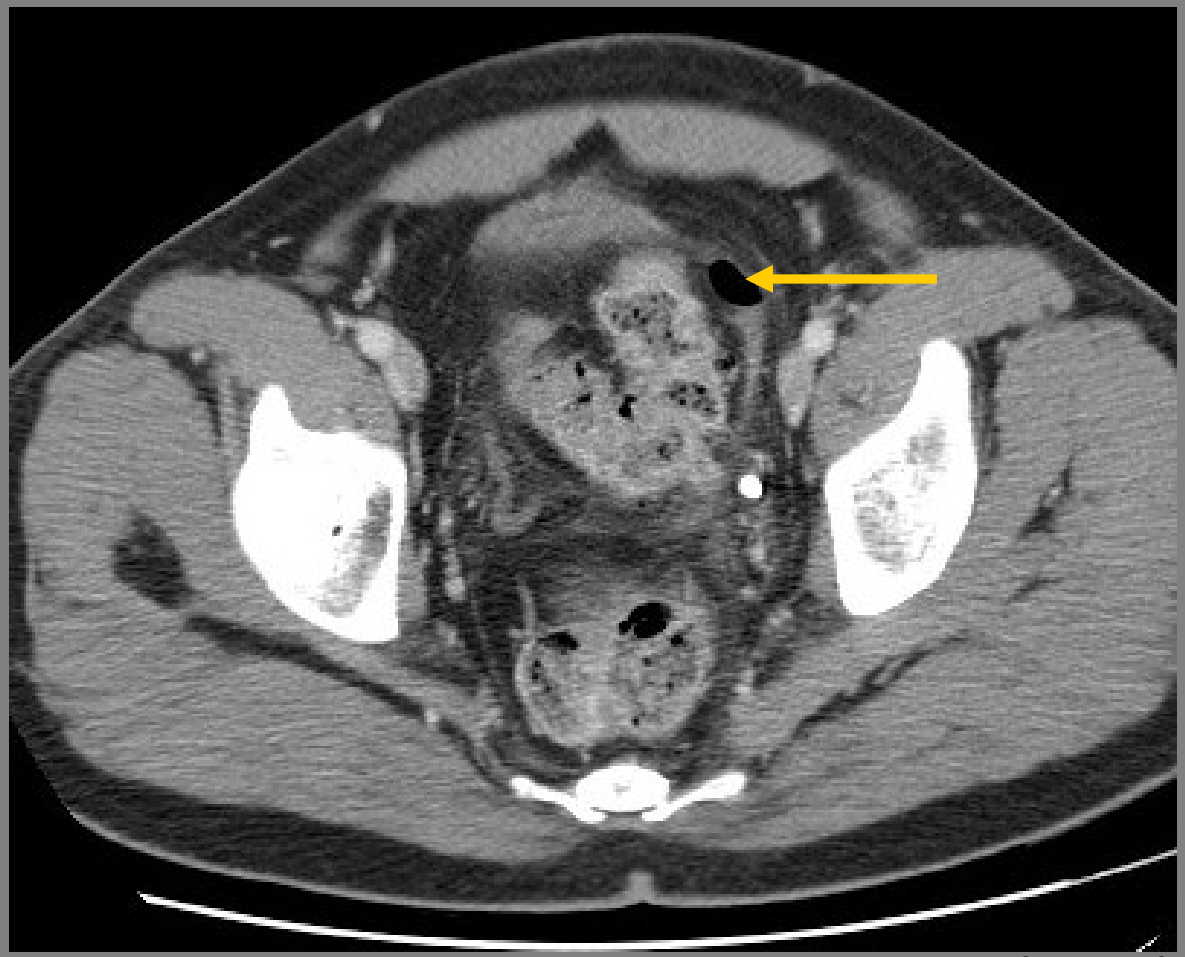
Diverticulitis: Treatment

- Mild uncomplicated diverticulitis: 7-10 days oral broad-spectrum antibiotics
  - Hospitalization indicated if unable to tolerate oral intake or pain requires narcotic analgesia
- Surgical consultation indicated when:
  - There is no response to medical management
  - Repeated attacks
  - Complications such as abscess, fistula, obstruction, or free air

Companion Patient #4: Mr. D

- 38 y/o male who developed left lower quadrant pain with some mild fever the day prior to admission

Complicated Diverticulitis: Perforation



Extraluminal pocket of air

Companion Patient #4: Mr. D
C+ CT Pelvis

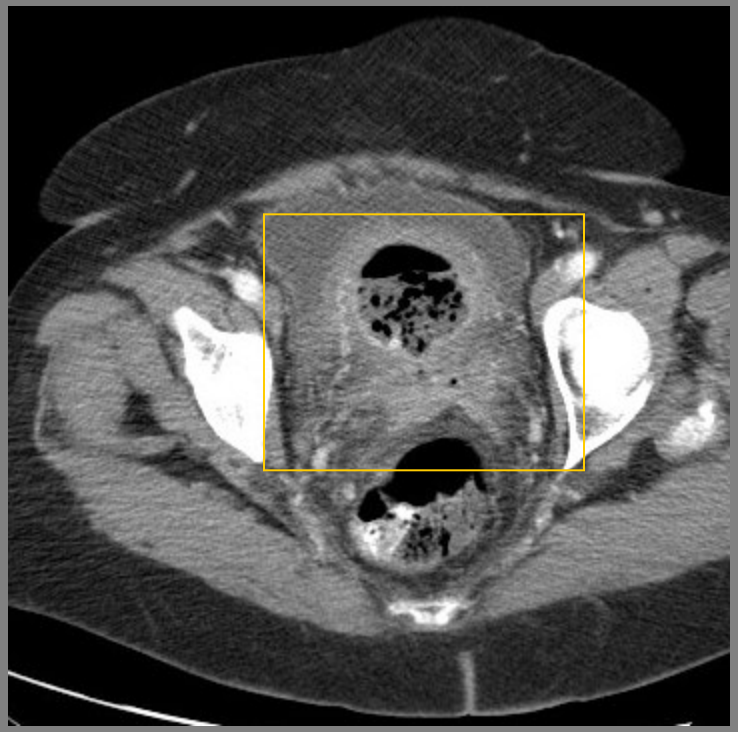
BIDMC (PACS)

Companion Patient #5: Ms. F

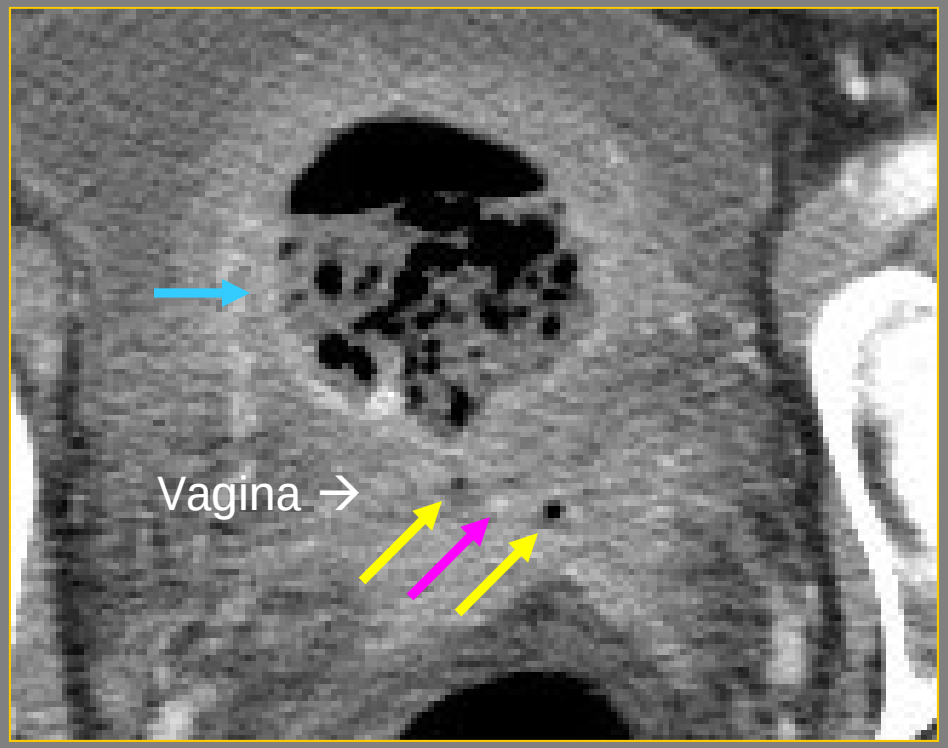
- 68 y/o female presents to the ED with malodorus vaginal discharge.

Complicated Diverticulitis: Abscess & Colovaginal Fistula

Companion Patient #5: Ms. F



C+ CT Pelvis



5.7 x 4.6 perisigmoid abscess filled with stool and air

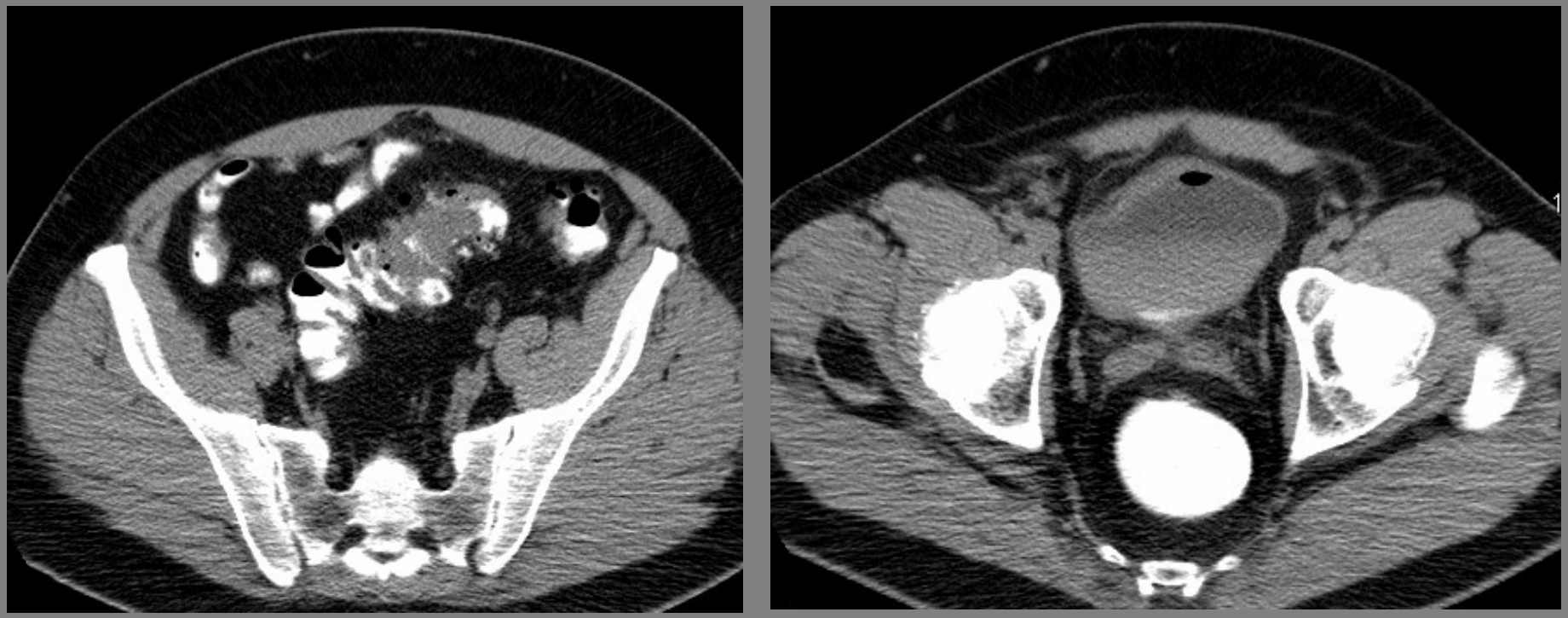
Small pockets of air and a tiny trace of contrast suggest fistulous connection

Images from BIDMC (PACS)

Back to Our Patient

What happened to Mr. L?

Complicated Diverticulitis: Colovesical Fistula



CT Pelvis. Rectal contrast without IV contrast.

Mr. L's diagnosis: Sigmoid diverticulitis and colovesical fistula

Images from BIDMC (PACS)

Mr. L's Initial Treatment

- Started on amoxicillin-clavulanate (Augmentin)
- Colonoscopy to rule out colon cancer
- Surgical procedure
  - Open sigmoidectomy with primary coloproctostomy

Mr. L's Further Treatment

- Six days later, Mr. L had fecal material in his urine and was sent emergently to the operating room.
  - Colorectal anastomosis taken down and end-colostomy created

Acknowledgments

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