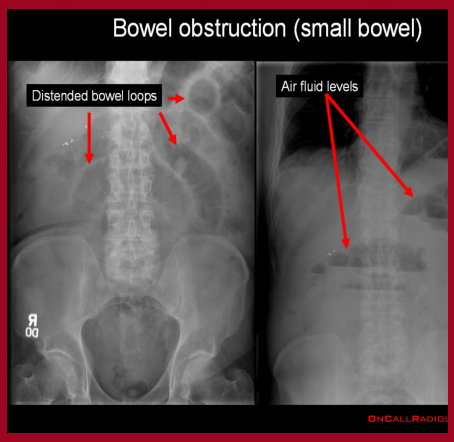
APRIL 2016 VOLUME #2 ISSUE 33

EM CASE OF THE WEEK

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE

AUTHOR: ALEXANDRA TIMIS, MS IV
EDITOR: ANDREA SARCHI, DO



A small bowel obstruction (SBO) occurs when the normal flow of intraluminal contents is interrupted, creating proximal bowel dilation and distal bowel decompression. If not properly managed, prolonged and excessive bowel dilation can compromise blood flow to intestinal tissue and result in a multitude of complications (ischemia, necrosis, perforation) that significantly increase mortality. This month we will explore facts about SBO and its management in the emergency department.

EM CASE OF THE WEEK

EM Case of the Week is a weekly "pop quiz" for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.

Intestinal Obstruction

A 62-year-old previously healthy female presents to the ED with a 3 day history of abdominal pain. The pain is crampy, diffuse and worsening over time. She also reports nausea with 4 episodes of non-bloody, non-bilious emesis. Last BM was 3 days ago. PSHx is pertinent for total abdominal hysterectomy 7 years ago. Her vital signs are T 99.9° F, HR 106, RR 16, BP 106/70, O2 sat 99% RA. Abdominal exam reveals moderate distension with tenderness to palpation and guarding. Abdominal plain film is ordered, which shows moderately dilated loops of bowel. CT of the abdomen/pelvis is subsequently performed, revealing bowel wall thickening and dilated loops of fluid-filled small bowel with a small amount of air. Which of the following statements about small bowel obstruction (SBO) are true?

A. The most common cause of SBO in adults is intussusception.

B. An SBO can essentially be excluded in a patient that describes multiple episodes of diarrhea.

C. The presence of air in the colon or rectum makes the diagnosis of complete SBO more likely.

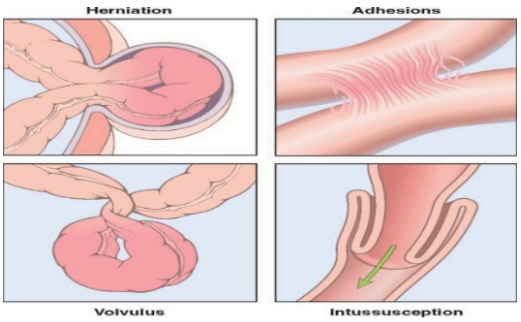
D. Non-operative management of partial obstructions is typically attempted first, which includes NG suction and IV fluids.

E. In patients with a complete SBO, the risk of strangulation is high and early surgical intervention is warranted.

F. Both D and E.

BROWARD HEALTH MEDICAL CENTER

Broward Health Medical Center
Department of Emergency Medicine
1625 SE 3rd Ave
Fort Lauderdale, FL 33316



Intestinal obstruction. The four major causes of intestinal obstruction are (1) herniation of a segment in the umbilical or inguinal regions, (2) adhesion between loops of intestine, (3) volvulus, and (4) intussusception.

Take Home Points

- Post-operative adhesions from previous abdominal/pelvic surgery are the most common cause of SBO.
- A high suspicion of acute mechanical SBO can be made by H&P in many patients, but plain abdominal films are used to confirm the diagnosis.
- Abdominal CT scan is the imaging modality of choice in determining specific site, severity of the obstruction, and complications.
- Initial management includes volume resuscitation, correction of metabolic abnormalities, and an assessment of the need for surgical exploration.
- Surgery is indicated in patients with clinical or radiologic evidence of complications.
- Nonoperative management can be successful in patients with partial SBO.

Small Bowel Obstruction

The correct answer is F. **A partial SBO can be managed non-operatively, while complete SBO requires urgent surgical intervention. Keep in mind that partial obstructions undergoing a trial of non-operative management with nasogastric suction and IV fluids require frequent reassessments to ensure that no complications are developing. Any indication of ischemia, necrosis or perforation will require prompt surgical intervention.**

Discussion:

Bowel obstruction occurs when the normal flow of intraluminal contents is interrupted. The cause of the obstruction can be external to the bowel (extrinsic), within the bowel wall (intrinsic), or due to a luminal defect that prevents the passage of GI contents. Obstruction is further broken down into partial or complete. The most important risk factor for SBO in the United States is adhesions secondary to prior abdominal/pelvic surgery.

A small bowel obstruction leads to progressive dilation of the intestine proximal to the blockage point, while distal to the blockage the bowel decompresses as luminal contents pass. Distension worsens by swallowed air and increased gas production from bacterial fermentation. And thus, as the process continues to progress, the bowel wall becomes edematous with fluid sequestering into it, and normal absorptive function is essentially lost. If bowel dilation continues to become excessive, the intramural vessels of the small intestine become compromised of blood flow and perfusion to the intestine becomes inadequate to meet the metabolic needs of the tissue. This will result in ischemia, which eventually causes necrosis and perforation unless the process is interrupted. **This is where our role becomes essential** – it is important for us as medical providers to understand how to recognize signs of a SBO and provide further management before such complications occur.

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Epidemiology

Acute, mechanical small bowel obstruction is a common surgical emergency that we see in the emergency department. It is estimated that about 300,000 laparotomies are performed yearly in the US for adhesion-related obstruction. Of all the cases of mechanical bowel obstructions, the small bowel is involved approximately 80% of the time.

The most important risk factors to look out for include: previous abdominal/pelvic surgery, hernias, intestinal inflammation (i.e. Crohn's disease or diverticulitis), history of or increased risk for cancer, and prior radiation therapy. For patients with previous bowel obstructions, the probability of recurrence increases with increasing number of episodes, regardless of management.

Clinical Findings

The clinical presentation of a mechanical SBO will depend on the etiology and site of obstruction. Patients can present with acute symptoms (nausea, vomiting and abdominal pain), intermittent obstructive symptoms (asymptomatic periods between episodes), or with chronic postprandial discomfort and abdominal distention. In patients with proximal SBO's, vomiting is usually more common. On the other hand, patients with distal SBOs usually present with abdominal distension. On physical exam, hyperactive bowel sounds occur early in the process as the GI tract attempts to overcome the obstruction; hypoactive bowel sounds occur late. It is important to exclude incarcerated hernias. **Proper genitourinary and pelvic examinations are essential.**

Routine laboratory studies are often used as an adjunct to diagnosis. They help to identify the presence of electrolyte abnormalities and dehydration (i.e. from excessive vomiting) and may also indicate potential complications (i.e. leukocytosis, metabolic acidosis). Check for symptoms commonly believed to be more diagnostic of intestinal ischemia, including fever (temperature > 100°F), tachycardia (> 100 beats/min) and peritoneal signs. Elevated serum lactate is also a sensitive indicator for bowel ischemia, although it is not very specific.

Diagnosis

A probable diagnosis of SBO can often be made through the H&P alone – however, abdominal imaging is often used to confirm the diagnosis. For most patients, obtaining plain abdominal films is usually the first step. Findings that suggest a small bowel obstruction include **dilated loops of bowel with air-fluid levels**, proximal bowel dilation with distal bowel collapse, or a gasless abdomen. Abdominal CT is the imaging of choice for determining the specific site (i.e., transition point, small vs. large bowel) and severity of obstruction (partial vs. complete), as well as for determining the etiology (hernias, masses, inflammatory changes) and potential complications.

Management and Treatment

The initial management of patients with bowel obstruction includes volume resuscitation with IV fluids, correction of metabolic abnormalities, and an assessment of the need for surgical exploration. In 2013, the World Society of Emergency Surgery published updated guidelines for the diagnosis and management of adhesive small bowel obstruction. The recommendations include the following:

- In the absence of vomiting, signs of strangulation, or CT-scan findings suggestive of complications, patients with partial SBO can be safely managed non-operatively with IV fluids and NGT decompression.
- A hypertonic, water-soluble contrast medium (Gastrografin) is recommended for both diagnostic *and* therapeutic purposes in non-operative management. These patients have more rapid resolution of symptoms, a shorter length of hospital stay, and possibly less need for surgical intervention.
- Non-operative management can be prolonged for up to 72 hours in the absence of signs of strangulation/peritonitis; surgery is recommended afterwards if there is *no resolution.*

Patients with clinical *or* radiologic signs of complicated bowel obstruction (ischemia, necrosis, perforation) require **immediate surgical exploration.**

1. Nobie, B. (2015, Jan 20). Small Bowel Obstruction. *Medscape*. Retrieved 2/16/2016 from http://emedicine.medscape.com/article/774140-overview
2. Bordeianou, L; Yeh D.D. Epidemiology, clinical features, and diagnosis of mechanical small bowel obstruction in adults. In: UpToDate, Post, TW (Ed), UpToDate, Waltham, MA, 2016.
3. Bordeianou, L; Yeh D.D. Overview of management of mechanical small bowel obstruction in adults. In: UpToDate, Post, TW (Ed), UpToDate, Waltham, MA, 2016.

ABOUT THE AUTHOR:
This month's case was written by Alexandra Timis. Alexandra is a 4th year medical student from NSU-COM. She did her emergency medicine rotation at BHMC in February 2016. Alexandra plans on pursuing a career in Internal