Bowel Obstruction

What are the criteria for admitting this patient, as opposed to managing them as an outpatient? Why would they come to the hospitalist service (compared to a subspecialist or a transition bed)?

1. Acute Bowel Obstruction:

- Symptoms most commonly associated with acute small bowel obstruction are nausea, vomiting, cramping abdominal pain, and obstipation (i.e., inability to pass flatus or stool).
- Abdominal pain associated with small bowel obstruction is frequently described as periumbilical and cramping with paroxysms of pain occurring every four or five minutes. A progression from cramping to more focal and constant pain may indicate peritoneal irritation related to complications (ischemia, bowel necrosis). A sudden onset of severe pain may suggest acute intestinal perforation. With proximal small bowel obstruction (duodenum, proximal jejunum), nausea and vomiting can be relatively severe, and patients with proximal small bowel obstruction typically cease taking in food or liquids orally.
- These patients with acute mechanical small bowel obstruction generally require admission to the hospital for initial management that includes intravenous fluid therapy and electrolyte replacement in preparation for surgery, if indicated, or as an element of nonoperative management.

Chronic/Intermittent Bowel Obstruction:

- Patients with chronic and/or intermittent mechanical small bowel obstruction, such as patients with small bowel strictures related to Crohn’s disease, radiation enteritis, or other etiologies that can cause partial bowel obstruction, may be managed expectantly on an outpatient basis.
- These patients usually present with chronic postprandial abdominal discomfort and variable nausea. Abdominal distention and tympany may be present, but usually without any fluid or electrolyte derangements.
- When a patient with chronic, partial small bowel obstruction becomes completely obstructed, the clinical presentation becomes indistinguishable from acute obstruction as described above. Such patients should limit their oral intake to fluids, and as long as hydration and normal electrolyte balance can be maintained, which may require outpatient fluid therapy, hospitalization may be avoided.

Surgical Consultation:

- Surgical consultation — For patients with symptoms that are severe enough to require admission for symptoms of abdominal pain, nausea, and vomiting, suggest prompt surgical consultation to aid in determining if immediate surgical intervention is needed.
- Worrisome symptoms include cessation of passage of stool or flatus, which indicates a complete obstruction, which is more likely to be associated with complications (ischemia, necrosis, perforation). However, it is important to remember that passage of flatus or feces can continue for 12 to 24 hours after the onset of symptoms as the more distal bowel decompresses. The absence of air or fluid in the distal small bowel or colon on plain abdominal radiographs or CT scan supports a diagnosis of complete obstruction.
- A special type of complete obstruction, a closed-loop obstruction, may be more difficult to identify on radiologic studies. A closed-loop obstruction occurs when a segment of intestine, usually small bowel, is obstructed in two locations, creating a segment with no proximal or distal outlet. Only a short segment of intestine may be distended because of minimal abdominal distention. Closed-loop obstruction can rapidly lead to complications (ischemia, necrosis, perforation); thus, early identification and treatment are important to restore perfusion to the affected segment of bowel. In many cases abdominal exploration will be needed to make a definitive diagnosis.
2. What is your differential diagnosis?

Include at least three most likely, as well as at least one sinister hypothesis.

It is important to differentiate between mechanical bowel obstruction and non mechanical bowel obstruction, such as paralytic ileus and intestinal pseudo-obstruction.

Paralytic ileus occurs to some degree after almost all open abdominal operations and can also be caused by peritonitis, trauma, intestinal ischemia, and medications (e.g., opiates, anticholinergics). It is exacerbated by electrolyte disorders, particularly hypokalemia. As the intestine becomes distended, the patient experiences many of the same symptoms as mechanical obstruction. However, on radiologic examination there is air in the colon and rectum, and on abdominal computed tomography (CT) or small bowel series there is no demonstrable mechanical obstruction.

Intestinal pseudoobstruction is a chronic condition characterized by symptoms of recurrent abdominal distention that may be associated with nausea, vomiting, and diarrhea. The colon is generally affected more than the small intestine. No mechanical cause can be demonstrated, and the patient frequently has a history of several previous operations for bowel obstruction during which no cause for obstruction could be found.

Causes of Mechanical Bowel Obstruction can be further classified into extrinsic lesions, intrinsic lesions and intraluminal obstructions (see attached table for details).

3. What investigations will you order? What ongoing follow-up should be done during the admission?

Workup

- Basic labs: CBC, electrolytes, extended electrolytes, liver enzymes and liver function tests, thyroid test

- **Abdominal xray with 3 views:** upright chest film and upright and supine abdominal films - if the patient cannot be placed into an upright position, a lateral decubitus abdominal film can show free air and/or air-fluid levels. This is one of the quickest ways to confirm a diagnosis of bowel obstruction because it is widely available, inexpensive, and may demonstrate findings that indicate the immediate need for urgent decompression (e.g., sigmoid volvulus) or surgical intervention (e.g., pneumoperitoneum, cecal or midgut volvulus).

- These can also assesses the lungs for evidence of aspiration in those who have been vomiting, and can easily be repeated to follow the patient’s progress.

- Findings on plain radiography consistent with small bowel obstruction include the following:
  - Dilated loops of bowel with air-fluid levels
  - Proximal bowel dilation with distal bowel collapse — Small bowel obstruction can be diagnosed if the more proximal small bowel is dilated more than 2.5 cm (outer wall to outer wall) and the more distal small bowel is not dilated. The stomach may also be dilated. The presence of air-fluid levels differing more than 5 mm from each other within the same loop of small bowel on upright films supports a diagnosis of mechanical small bowel obstruction
  - Gasless abdomen — A gasless abdomen may be due to complete filling of loops of bowel with sequestered fluid. The severity of the bowel obstruction may be underestimated. A string of beads (or pears) sign may be seen in predominantly fluid-filled small bowel loops on upright or lateral films, as small amounts of intraluminal gas collect along the superior bowel wall separated by the valvulae conniventes
Abdominal CT: Multidetector CT of the abdomen is more useful than plain radiographs for identifying the specific site (ie, transition point) and severity of obstruction (partial versus complete); determining the etiology by identifying hernias, masses, or inflammatory changes; and for identifying complications (ischemia, necrosis, perforation). Plain films can be equivocal in 20 to 30 percent of patients and are "normal, nonspecific, or misleading" in 10 to 20 percent of patients.

Some patients may require additional studies to diagnose obstruction if abdominal CT is equivocal (eg, chronic symptoms, partial obstruction) or abdominal CT cannot be performed (eg, contrast allergy, inability to transport patient). These might include ultrasound, magnetic resonance enterography, or contrast studies.

Contrast studies: in palliative patients, should use water-soluble contrast such as gastrograffin rather than barium if gastric outlet/proximal small bowel obstruction is suspected. Palliative patients tend to have reduced GI motility (both from disease and from opioids), and it will be difficult for them to evacuate the barium post-study. Barium hardens very quickly and can itself cause obstruction. Barium is best used only if patient is a surgical candidate and the surgeon is trying to identify the obstruction site.

4. What will be the management principles for the most likely condition? Include both pharmacologic and nonpharmacologic management. What contraindications could exist for these choices? Be ready to discuss these with your preceptor in detail.

Try and answer the following questions with complete history, physical exam and investigations:
- Mechanical or functional?
- Partial or complete?
- At what level?
- Causes?
- Reversible or irreversible?
- Is the patient a surgical candidate?
- Stop any contributing medications – narcotics, anti-cholinergics, anti-hypertensives (CCB, diuretics), NSAIDS, psychotropics, antacids, iron. Stop laxatives and prokinetic agents if obstruction is complete.
- Estimate volumes status
- IV/SC fluids with electrolyte correction
- NPO until passing gas and bowel sounds are consistently heard
- Switch route of medication administration
- Manage Symptoms:
  - Pain: Opioids, buscopan if abdominal colic (it's an anticholinergic agent that decreases bowel motility)
  - Nausea:
    - Complete obstruction: give halol, can also trial low dose methotrimpeprazine or gravol
    - Paralytic ileus or partial bowel obstruction: trial maxeran (monitor carefully for progression to complete obstruction or if symptoms worsen)
    - Anti-secretory agents – bowel produces ++ secretions throughout the day that will make nausea, vomiting and distention worse in context of obstruction
    - Octreotide, corticosteroids, anticholinergic agents, buscopan
    - Consider placement of NG tube to suction to relieve gastric distension – should only be for short term use. Long term it is very uncomfortable and may produce necrosis of nasal passages, hoarseness and increased risk of aspiration
  - Surgical Management: can consult with general surgery or GI for surgical management options, including bowel resection or bypass, colostomy/ileostomy, stents, endoscopic laser resections, PEG venting tube insertion
5. **What complications could arise during this patient’s stay? How could you attempt to prevent these?**

See #1 under surgical consultation for complications that can arise.

Prevention methods include treating constipation aggressively once distal bowel obstruction is ruled out. Bowel rest

6. **What other resources can you enlist to assist you in the management of this patient?**

GI service if patient not recovering as expected.

General Surgery if bowel obstruction is complete or secondary to a very large tumour – can consider surgical resection or a stent to relieve symptoms.

Palliative care service for malignant bowel obstructions, and to facilitate outpatient follow up in patients with recurrent malignant obstructions.

7. **How will you know this patient is ready for discharge – what parameters will be your guide and what needs to be in place at their residence?**

- Resumption of normal bowel function and appetite
- Nausea/Vomiting subside
- Stable labs, especially electrolytes
- Post-op follow up if surgical candidate, or follow up with appropriate specialist (outpatient GI) vs. family physician
- Homecare – palliative vs. non palliative