Acute colonic pseudo-obstruction (Oglivie's syndrome)

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basics

**Definition**

- Acute colonic pseudo-obstruction refers to a paralytic ileus of the colon which causes severe colonic dilation. In some cases the small bowel may also be involved.
  - This is not due to anatomic obstruction, but rather due to hypomotility.
### physiology

- The tension on the bowel wall is proportional to the radius (based on Laplace's Law, figure below). Therefore, as the colon dilates, this increases the wall tension, which may decrease blood flow to the colon. Decreased motility with gas accumulation adds to the vicious spiral wherein increased wall tension causes the colon wall to stretch further – which in turn increases the radius, further increasing the wall tension. The net result is progressive dilation with eventual perforation, if left unchecked.
- Decompression of the colon is needed, before the colon dilates beyond a point of no return.

![Laplace's Law](https://emcrit.org/ibcc/oglivie/attachment/laplace/)

### clinical presentation

### contexts

- Occasionally, patients may present to the hospital with an *initial* presentation caused by colonic pseudo-obstruction.
- More commonly, colonic pseudo-obstruction develops as a *nosocomial complication*. For example,
  - As a post-operative complication (especially following orthopedic or gastrointestinal surgery, with prolonged immobility).
  - Arising in the context of mechanical ventilation (especially among patients on continuous infusion of opioid analgesia).

### manifestations

https://emcrit.org/ibcc/oglivie/
- Abdominal distension, often with tenderness.
- Nausea and vomiting.
- Inability to pass stool or flatus is common, but not always seen.
- Intubated patients may present with tube feeding intolerance, distension, and reduced stool output.

**manifestation of progressive colonic pseudo-obstruction:**
- In the advanced state, pseudo-obstruction may progress to perforation causing septic shock.
- Abdominal compartment syndrome may also result.

**differential diagnosis**
- Fecal impaction
- Distal mechanical obstruction of the colon (e.g., malignancy, volvulus)
- Toxic megacolon (due to either inflammatory bowel disease or, more commonly, *Clostridioides difficile* [https://emcrit.org/ibcc/cdiff/])

**physical examination**
- The abdomen is generally distended and tympanitic.
- Among conscious patients, peritoneal signs may suggest critical distension (causing bowel wall ischemia) or possibly perforation.
- Rectal examination may be helpful to evaluate for impaction (primarily among patients who aren't receiving a CT scan regardless).

**abdominal X-ray**
- Role of abdominal X-ray:
  - Usually the first imaging study obtained.
  - Serial abdominal X-ray may be helpful to follow the course of the illness.
- The hallmark finding is colonic dilation, especially involving the cecum. This often involves considerable amounts of gas.
  - Dilation should extend to the rectum (arguing against mechanical obstruction or volvulus).
  - There should be normal haustral markings.
- A moderate amount of small intestinal dilation and air-fluid levels may also be seen.
- The size of the cecum is critical:
  - Cecum >9 cm: cutoff used to define presence of colonic pseudo-obstruction.
  - Cecum >12 cm: indicates significant risk of perforation.
CT scan is generally advisable, to exclude alternative diagnoses (e.g., mechanical obstruction). CT scan may be unnecessary if the following conditions are all met:

1. Colonic pseudo-obstruction develops within the hospital as a complication of another severe illness (e.g., post-operative or intubated patient).
2. Upon hospital admission, the patient had a normal mental status and no abdominal complaints.
3. There are no signs of severe tenderness or peritoneal irritation.
4. There is no evidence of septic shock.
5. Abdominal X-ray is fully compatible with a diagnosis of colonic pseudo-obstruction.
6. Rectal examination excludes fecal impaction.

Rectal contrast may increase risk of perforation and should be avoided.

Colonic pseudo-obstruction massive dilatation of the cecum (diameter > 10 cm) and right colon on abdominal X-ray.
causes

sepsis

medications

- Opioids
- Anticholinergics, for example:
  - Antipsychotics, tricyclics
  - Histamines
  - Muscle relaxants (e.g., baclofen, cyclobenzaprine, tizanidine)
  - Parkinson's disease medications
- Calcium channel blockers
- Alpha-adrenergic agents
- Clonidine, dexmedetomidine

electrolyte or metabolic abnormalities

- Electrolyte abnormalities (especially hypokalemia)
- Uremia
- Hyperglycemia

neurological disorders

- Spinal cord lesions
- Stroke
- Parkinson's disease

abdominal pathology

- Recent surgery
- Peritonitis, appendicitis, cholecystitis, pancreatitis
- Intestinal ischemia

approach & management

Note: There is no high-level evidence regarding colonic pseudo-obstruction. The following is based on common practice patterns.

#1: Exclude impaction, perforation, or mechanical obstruction

- CT scan is generally advisable, unless the pseudo-obstruction clearly developed within the hospital as a nosocomial complication (see above section on evaluation for when to obtain a CT scan).
  - If CT scan is not performed, then a rectal examination should be performed to exclude fecal impaction.

#2: Consider surgical consultation

- When to consider consulting a surgeon:
  - Cecum diameter is >12 cm.
  - Abdomen is very tender, raising concern for impending perforation or ischemia.
- Absolute indications for surgery are limited (e.g., bowel perforation or bowel infarction).
- The perioperative mortality is enormous (~25%), so surgery is generally avoided if at all possible. Even if the cecum is severely dilated, a trial of neostigmine may still be less dangerous than surgery.

#3: Aggressive medical management

- Basic measures:
- Anti-motility drugs and opioids should be discontinued or weaned as possible. Enteral naloxone may be considered for patients on moderate to high doses of opioids (more on this [here](https://emcrit.org/ibcc/ileus/#opioid_antagonists)).
- Mobilization should be undertaken as able (ideally ambulation, but frequent repositioning in bed may also be helpful).
- Electrolyte abnormalities should be treated.
- Frequent reevaluation to evaluate for improvement or deterioration (both clinical examination and abdominal X-ray)
- Neostigmine is the backbone of medical therapy (see below).
- Some sources recommend delaying neostigmine for a period of "conservative management." However, neostigmine is generally quite safe and effective when monitored properly. Prompt administration may prevent colonic pseudo-obstruction from worsening and expedite clinical improvement.
- Discontinue enteral feeding until pseudo-obstruction has improved. (However, there is no evidence to support nasogastric drainage.)
- Follow serial abdominal X-rays to confirm improvement.

### neostigmine

- Contraindications:
  - Mechanical bowel obstruction
  - Signs of peritonitis or perforation
  - Bradycardia, hypotension
  - Seizure disorder
  - Active asthma exacerbation
  - Renal insufficiency
  - Pregnancy
- Technique
  - Give 2 mg over 5 minutes (⚠️ do not give neostigmine as a rapid IV push).
  - There is a small risk of bradycardia, which may be treated with atropine or epinephrine infusion. Resuscitation equipment and medications should be present to manage this if necessary.
  - If neostigmine fails to work, the use of a neostigmine infusion (0.4-0.8 mg/hr for 24 hours) has been proven to be effective in one randomized controlled trial. ([11430537](https://pubmed.ncbi.nlm.nih.gov/11430537/)) Alternatively, a second 2-mg dose may be repeated three hours after the initial dose.
- Neostigmine-glycopyrrolate cocktail?
  - Glycopyrrolate is an anticholinergic agent which will tend to increase the heart rate and also reduce bowel motility. Neostigmine seems to act more strongly on the heart than the gut.
  - Adding glycopyrrolate to neostigmine reduces the risk of bradycardia. Adding glycopyrrolate could theoretically reduce the efficacy of neostigmine on pseudo-obstruction, but a study in patients with spinal cord injury found that the combination was as effective as neostigmine alone. ([15984982](https://pubmed.ncbi.nlm.nih.gov/15984982/), [18338263](https://pubmed.ncbi.nlm.nih.gov/18338263/), [28893807](https://pubmed.ncbi.nlm.nih.gov/28893807/))
- Currently, neostigmine monotherapy remains the preferred therapy for most patients. However, combined therapy could be useful for patients at an increased risk of bradyarrhythmia.
- A commonly used combination is 2 mg neostigmine plus 0.4 mg glycopyrrolate.

### #4: medical management failure

- Decompressive colonoscopy is an option. However, performing a procedure on an un-prepared and dilated colon has a risk of perforation.
- The other alternative is colonic resection, which also carries considerable risk.
- Consult with gastroenterology and/or surgery.
If untreated or managed conservatively ("wait-and-see" approach), colonic pseudo-obstruction may lead to cecal perforation. Colonic pseudo-obstruction will usually respond nicely to prompt administration of IV neostigmine. The best approach is generally prompt medical therapy. Treatment with osmotic laxatives will make this worse (e.g., lactulose or polyethylene glycol). Be careful of treating constipation blindly with an escalating regimen of laxatives.

References


