Trouble down below: Understanding small-bowel obstruction

Diane Mills, 47, arrives at the emergency department (ED) complaining of intermittent moderate to severe crampy midabdominal pain that's lasted for several days. She'd also been nauseated and had vomited, but she hasn't vomited since yesterday. It's been a few days since her last bowel movement. Ms. Mills had a laparoscopic cholecystectomy about a month ago. What's causing her current complaint?

Do not pass go

Small-bowel obstruction (SBO) is the most likely cause of the pain, nausea, and vomiting that Ms. Mills is experiencing. Postsurgical adhesions are by far the most common cause of mechanical SBO, followed by strangulated hernia, malignancy, Crohn's disease, and, rarely, volvulus. See *Types and causes of small-bowel obstruction* for more information.

In SBO, the intestine dilates above the blockage due to an accumulation of gastrointestinal secretions and swallowed air. Vomiting is typically associated with proximal SBOs.

Small-bowel distension can cause lymphatic compression that leads to bowel wall lymphedema. Increasing intraluminal pressure can result in reduced venous and arterial blood flow and severe fluid loss, dehydration (which can lead to hypovolemic shock and death), and electrolyte imbalance. Immediate treatment is needed to prevent potentially life-threatening complications.

Strangulated SBOs are most commonly associated with adhesions. A loop of bowel twists, and arterial blood flow is occluded. Left untreated, intestinal ischemia will progress to necrosis, perforation, peritonitis, and possibly death. A strangulated SBO is a surgical emergency.

During your physical examination of Ms. Mills, you observe abdominal distension. On auscultation, bowel sounds are diminished or absent below the obstruction. Early on, hyperactive bowel sounds are usually present as the bowel tries to overcome the obstruction.

To rule out pathology, the patient's health care provider will order a series of lab tests, including blood chemistry, complete blood cell count, blood urea nitrogen (BUN), and creatinine. Increased BUN, creatinine, and hematocrit may signal dehydration. Liver function tests will be done to rule out hepatic and biliary disease. The patient's blood should be typed and crossmatched in case surgery is required.

Patients with an SBO are at risk for metabolic acidosis and alkalosis due to vomiting and malabsorption of gastric contents related to the obstruction. Metabolic acidosis and alkalosis typically resolve when the SBO resolves.

The health care provider will order X-rays of the bowel to look for evidence of obstruction or perforation. If the X-rays are nonspecific, the health care provider may order visualization of the bowel using a contrast agent and fluoroscopy. A computed tomography scan is preferred if the patient presents with fever, tachycardia, localized abdominal pain, or an elevated white blood cell count.

Treatment strategies

Initial treatment of Ms. Mills in the ED consists of aggressive intravenous (I.V.) fluid replacement, bowel decompression using a nasogastric (NG) tube, prophylactic antibiotics, and a prompt surgical consult. Surgery is indicated to remove most mechanically caused SBOs and any ischemic bowel tissue. In Ms. Mills' case, adhesions are completely blocking the small intestine, so she'll need surgery.

Whether your patient with an SBO is treated medically or surgically, follow these procedures:

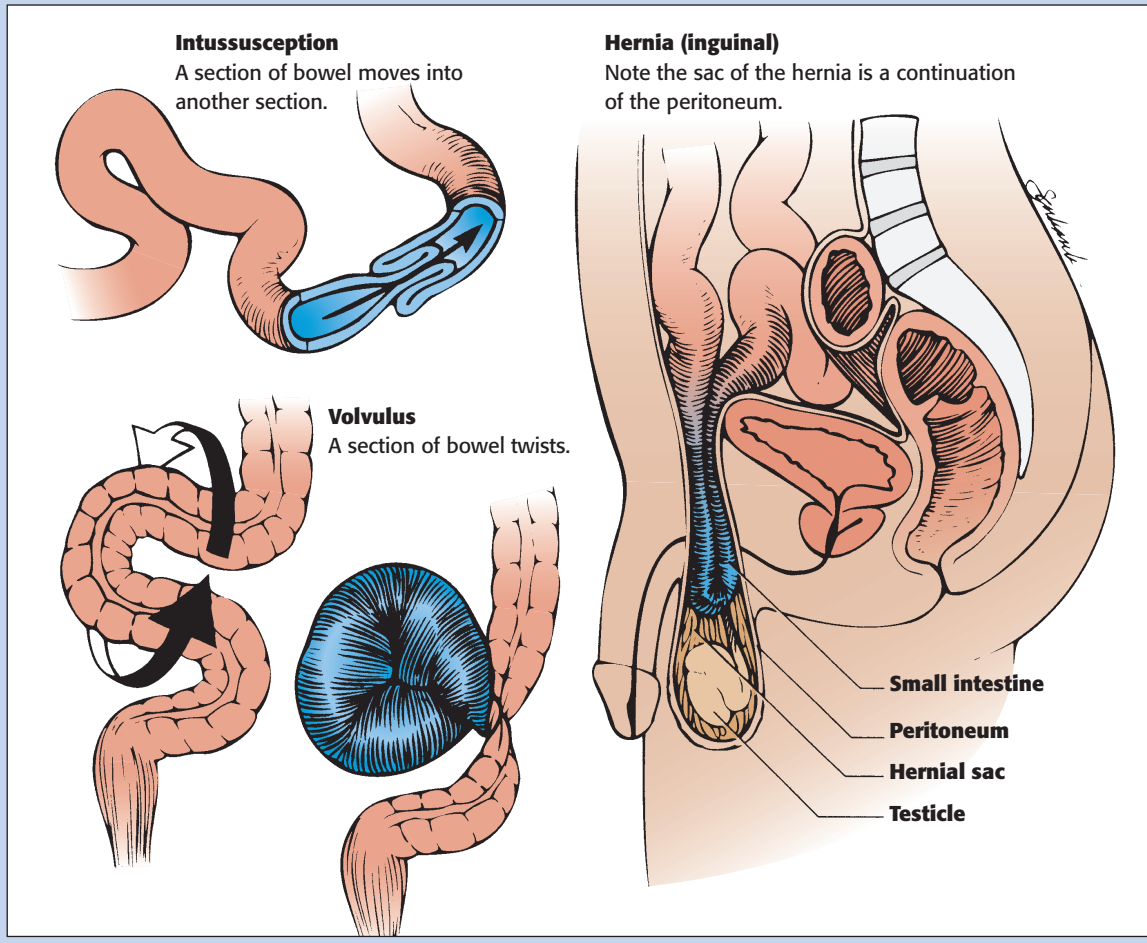
- Assess the patient often, at least every 4 hours. Document mental status, vital signs, pain assessment, bowel sounds, and intake and output. Maintain N.P.O. status as ordered, and institute early nutritional support as indicated. Insert an NG tube to help decompress the bowel by removing fluids and gas, reducing the risk of aspiration.
- Start an I.V. line to replace fluids and electrolytes as ordered. Urine output of at least 30 ml/hour indicates adequate hydration.
- Administer medications as ordered. Opioids,

Types and causes of small-bowel obstruction

Neurogenic
A halt to intestinal peristalsis for more than 72 hours is known as adynamic (paralytic) ileus, and it's the sympathetic nervous system's response to peritoneal insult. To some degree, all patients who have abdominal surgery develop post-operative ileus; handling irritates the bowel. Other causes of adynamic ileus include nonsurgical trauma, hypokalemia, myocardial infarction, and vascular insufficiency.

Mechanical
Adhesions, volvulus, hernia, diverticulitis, tumor, gallstones, and intussusception are mechanical causes of small-bowel obstruction (SBO). Adhesions and hernias account for up to 75% of cases, with adhesions posing a greater risk in adults and hernias more common in children.

Vascular
Complete or partial occlusion of the arteries supplying the small intestine will cause SBO. There are chronic and acute forms of arterial and venous mesenteric ischemia. Fifty percent of acute mesenteric ischemia cases are due to a superior mesenteric artery occlusion from a thrombus or an embolus; 25% of cases are due to a nonocclusive infarction; and the remaining cases are due to an inferior mesenteric artery occlusion, a mesenteric venous thrombosis, or arteritis. Acute mesenteric ischemia is a surgical emergency; the mortality rate is 75% because the diagnosis is frequently delayed.



though effective for pain control, may not be indicated because they slow peristalsis.

• Maintain proper position and function of the NG tube. Irrigate the tube with 0.9% sodium chloride solution as ordered to maintain patency. Monitor and document the volume and characteristics (such as color and consistency) of the drainage. Alert the provider immediately to any increase in pain, nausea, or abdominal distension.

• Keep the head of the bed elevated to help prevent aspiration and to improve respiratory status.

• Provide oral and nasal care every 2 to 4 hours to alleviate dryness from the NG tube and N.P.O. status.

• Assess for abdominal distension by measuring the patient's girth every 2 to 4 hours.

• Assess her understanding of procedures and care provided. Involve specialists such as case managers and wound, ostomy, and continence nurses as appropriate.

• Facilitate early ambulation and frequent position changes, especially after surgery, to relieve abdominal pressure, ease breathing, and help reestablish peristalsis.

• Report any signs and symptoms of bowel strangulation immediately. These include vomiting, increasing distension, fever, or pain that changes from intermittent to constant.

Your patient's discharge instructions should include wound care if she's had surgery and advice on reestablishing normal bowel function. Encourage her to include adequate fiber in her diet, to drink plenty of water, and to exercise.

Thanks to the combined efforts of the ED staff, the surgical team, and your expert follow-up care, Ms. Mills will have an uneventful recovery and will soon be back to her normal daily activities. ‹›

SELECTED REFERENCES

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