

## Small bowel surgery

Written by Administrator

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### Background:

A small-bowel obstruction (SBO) is caused by a variety of pathologic processes. The leading cause of SBO in developed countries is postoperative adhesions (60%) followed by malignancy, Crohn disease, and hernias, although some studies have reported Crohn disease as a greater etiologic factor than neoplasia. Surgeries most closely associated with SBO are appendectomy, colorectal surgery, and gynecologic and upper gastrointestinal (GI) procedures. One study from Canada reports a higher frequency of SBO after colorectal surgery, followed by gynecologic surgery, hernia repair, and appendectomy. Lower abdominal and pelvic surgeries lead to obstruction more often than upper GI surgeries.

SBOs can be partial or complete, simple (ie, nonstrangulated) or strangulated. Strangulated obstructions are surgical emergencies. If not diagnosed and properly treated, vascular compromise leads to bowel ischemia and further morbidity and mortality. Because as many as 40% of patients have strangulated obstructions, differentiating the characteristics and etiologies of obstruction is critical to proper patient treatment.

### Pathophysiology:

Obstruction of the small bowel leads to proximal dilatation of the intestine due to accumulation of GI secretions and swallowed air. This bowel dilatation stimulates cell secretory activity resulting in more fluid accumulation. This leads to increased peristalsis both above and below the obstruction with frequent loose stools and flatus early in its course.

Vomiting occurs if the level of obstruction is proximal. Increasing small-bowel distention leads to increased intraluminal pressures. This can cause compression of mucosal lymphatics leading to bowel wall lymphedema. With even higher intraluminal hydrostatic pressures, increased hydrostatic pressure in the capillary beds results in massive third spacing of fluid, electrolytes, and proteins into the intestinal lumen. The fluid loss and dehydration that ensue may be severe and contribute to increased morbidity and mortality.

Strangulated SBOs are most commonly associated with adhesions and occur when a loop of distended bowel twists on its mesenteric pedicle. The arterial occlusion leads to bowel ischemia and necrosis. If left untreated, this progresses to perforation, peritonitis, and death.

Bacteria in the gut proliferate proximal to the obstruction. Microvascular changes in the bowel wall allow translocation to the mesenteric lymph nodes. This is associated with an increase in incidence of bacteremia due to *Escherichia coli*, but the clinical significance is unclear.

### Frequency:

In the US: SBO accounts for 20% of all acute surgical admissions.

### Mortality/Morbidity:

Mortality and morbidity are dependent on the early recognition and correct diagnosis of obstruction. If untreated, strangulated obstructions cause death in 100% of patients. If surgery is performed within 36 hours, the mortality decreases to 8%. The mortality rate is 25% if the surgery is postponed beyond 36 hours in these patients.

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### History:

Obstruction can be characterized as either partial or complete verses simple or strangulated.

Abdominal pain (characteristic with most patients)

Pain, often described as crampy and intermittent, is more prevalent in simple obstruction.

Often, the presentation may provide clues to the approximate location and nature of the obstruction.

Usually pain that occurs for a shorter duration of time and is colicky and accompanied by bilious vomiting may be more proximal. Pain lasting as many as several days, which is progressive in nature and with abdominal distention, may be typical of a more distal obstruction.

Changes in the character of the pain may indicate the development of a more serious complication (ie, constant pain of strangulated or ischemic bowel).

Nausea

Vomiting, which is associated more with proximal obstructions

Diarrhea (early)

Constipation (late) as evidenced by the absence of flatus or bowel movements

Fever and tachycardia - Occur late and may be associated with strangulation

Previous abdominal or pelvic surgery and/or previous radiation therapy (may be part of patient's medical history)

History of malignancy (particularly ovarian and colonic)

### Physical:

Abdominal distention

Duodenal or proximal small bowel has less distention when obstructed than the distal bowel has when obstructed.

Hyperactive bowel sounds occur early as GI contents attempt to overcome the obstruction.

Hypoactive bowel sounds occur late.

Exclude incarcerated hernias of groin, femoral triangle, and obturator foramina.

Proper genitourinary and pelvic examinations are essential.

Look for the following during rectal examination:

Gross or occult blood, which suggests late strangulation or malignancy

Masses, which suggest obturator hernia

Check for symptoms commonly believed to be more diagnostic of intestinal ischemia, including the following:

Fever ( $>100^{\circ}\text{F}$ )

Tachycardia ( $>100$  beats/min)

Peritoneal signs

No reliable way exists to differentiate simple from early strangulated obstruction on physical examination. Serial abdominal examinations are important and may detect changes early.