Small Bowel Obstruction

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KEYWORDS

• Small bowel obstruction • Intestinal obstruction • Enterolysis • Adhesiolysis
• Water soluble contrast challenge

KEY POINTS

- Identify patients early who need urgent surgery and who will fail nonoperative management to avoid undue morbidity and mortality. If no indication for urgent operation, computed tomography scan with/without intravenous contrast is recommended.
- Nonoperative management includes bowel rest, nasogastric tube decompression, serial examinations/laboratory tests, and water- soluble contrast challenge.
- Conditions such as age greater than 65, post Roux-en-Y gastric bypass, inflammatory bowel disease, malignancy, virgin abdomen, diabetes, pregnancy, hernia, early postoperative state, and malnutrition deserve special consideration.
- Open and laparoscopic exploration are safe and effective, depending on the surgeon's experience and the etiology for obstruction.
- Regardless of operative approach, timing is paramount. Examine the abdominal cavity, identify/alleviate obstruction source(s), run the bowel to assess for viability, confirm resolution of obstruction(s), and identify/repair injuries.

INTRODUCTION: NATURE OF THE PROBLEM

The concept management of patients with small bowel obstruction (SBO) became more complicated in 1981 when Bizer and colleagues[1] reported that nonoperative management was successful in a significant percentage of patients. Our approach has changed considerably since then owing to advancements in imaging technology, the prevalence of adhesion disease, the prominence of laparoscopy, and the development of protocols to help ensure timely intervention. What has not changed is the need to avoid nontherapeutic surgery, as well as unnecessary delay when surgery is required. Morbidity and mortality owing to SBO increase when there is an undue delay in operation and decrease with the institution of appropriately timed surgery.[2]

Disclosure: The authors have nothing to disclose.
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Surg Clin N Am ■ (2018) ■–■
https://doi.org/10.1016/j.suc.2018.05.007 **surgical.theclinics.com**

The most common reason for litigation in SBO malpractice claims is failure to diagnose and treat in a timely manner.[3] The challenge for the emergency general surgeon is identifying as quickly as possible the 24% of patients presenting with SBO who will not resolve without surgery.[4]

RELEVANT ANATOMY AND PATHOPHYSIOLOGY

When considering SBO, it is important to understand the difference between functional disorders that lead to nonpropulsion through the gut and mechanical disorders that impede otherwise normal propulsive effort. Gastrointestinal paralysis (ileus) secondary to enteritis that may be attributable to surgery, medication, infection, or inflammation is the most common imitator of a SBO in terms of presenting symptoms, physical examination findings, and static imaging findings. It is often brought to the attention of a surgeon when a radiologist states that SBO cannot be ruled out based on radiographic patterns. Ileus results in dysfunctional peristalsis, which is not correctable with surgery, and it often falls on the surgeon to differentiate between the two. Relevant history including identification of risk factors for ileus, trends in the abdominal examination and laboratory results, and dynamic contrast imaging findings help to make the call.

SBO is due to intraluminal or extraluminal mechanical compression (**Table 1**). Adhesion disease is the most common cause of mechanical SBO in developed countries.[5] Less common causes include hernia, malignancy, and various infectious and inflammatory disorders.

CLINICAL PRESENTATION AND PHYSICAL EXAMINATION

SBO is included in the differential diagnosis when a patient presents with nausea, vomiting, abdominal pain, abdominal distension, and constipation. Rarely are all of these symptoms present. Pain attributed to mechanical SBO is intermittent, described

Table 1
Intraluminal or extraluminal mechanical compression causes for SBO

>70% Mechanical SBOs	Adhesion Disease[5]
Less common causes:	Abdominal wall or internal hernia Anastomotic stricture Volvulus Neoplasm Sclerosis Abscess Perforation Malrotation Fecalith Gallstone[6] Bezoar[7] Foreign bodies
Less common causes: Inflammatory disorders	Crohn's disease Immunologic disorders Pelvic inflammatory disease Endometriosis
Less common causes: Infectious disorders	Tuberculosis Parasites

Abbreviation: SBO, small bowel obstruction.