



Large Bowel Obstruction: Emergency Care, Clinical Response, and Acute Hospital Management Perspectives

Turki Mohammad Hasssan Almalki⁽¹⁾, Bassam Alrimthi Alanazi⁽²⁾, Mohammed Owaid Mutlaq Alanazi⁽²⁾, Hamed Mohammed Almolhis⁽³⁾, Turki Saleh Abdulfattah Alamri⁽³⁾, Abdullah Rabie Mohammed Alsahli⁽³⁾, Saleh Muteb Nafea Albadrani⁽³⁾, Basem Saud Ahmed Farhan⁽⁴⁾, Mohammed Ghazi Alhejili⁽⁵⁾, Mohammad Nasser Hamdan Al Aftan⁽⁶⁾

(1) Red Crescent Authority, Tabuk First Ambulance Gathering Center, Saudi Arabia,

(2) Saudi Red Crescent Authority, Al-Shuqaiq Ambulance Center – Al-Jouf Region, Saudi Arabia,

(3) Ohud Hospital, Ministry of Health, Saudi Arabia,

(4) King Salman Bin Abdulaziz Medical City, Ministry of Health, Saudi Arabia,

(5) King Salman Medical City, Ministry of Health, Saudi Arabia,

(6) Dawadmi General Hospital, Riyadh Third Health Cluster, Ministry of Health, Saudi Arabia

Abstract

Background: Large bowel obstruction (LBO) is a critical surgical emergency characterized by the cessation of normal colonic transit, leading to rapid physiological decompensation. It is a common initial presentation of advanced colorectal cancer and can also arise from benign causes like volvulus, diverticulitis, or pseudo-obstruction.

Aim: This comprehensive review aims to detail the etiology, pathophysiology, clinical evaluation, and contemporary management strategies for LBO, emphasizing the integration of emergency care, diagnostic imaging, and multidisciplinary treatment.

Methods: A narrative synthesis of current literature was conducted, analyzing diagnostic approaches (including CT imaging and endoscopy) and evidence-based interventions. The review evaluates guidelines and recent clinical trials comparing endoscopic, radiologic, and surgical management.

Results: Initial management prioritizes aggressive fluid resuscitation and electrolyte correction. CT imaging is the diagnostic cornerstone. For malignant LBO, self-expanding metal stenting has emerged as an effective bridge-to-surgery, reducing stoma rates and enabling elective single-stage resection with similar long-term oncologic outcomes to emergency surgery. Surgery remains definitive for many cases, with approach (single vs. multi-stage) tailored to patient physiology and disease characteristics. Specific etiologies like sigmoid volvulus require endoscopic decompression, while acute colonic pseudo-obstruction is managed with neostigmine.

Conclusion: Successful LBO management requires timely diagnosis, hemodynamic stabilization, and an etiology-driven intervention strategy. A coordinated, interprofessional approach optimizes outcomes by integrating endoscopic, radiologic, and surgical expertise to reduce morbidity and mortality.

Keywords: Large bowel obstruction, colorectal cancer, self-expanding metal stent, computed tomography, volvulus, Ogilvie syndrome.

Introduction

Large bowel obstruction represents a significant clinical emergency, characterized by a rapid onset of physiological deterioration that can include severe dehydration, electrolyte imbalance, sepsis, and hemodynamic instability. The condition arises when colonic transit is impaired, either due to a structural obstruction, such as a tumor, volvulus, or stricture, or a functional obstruction, such as Ogilvie syndrome, where motility failure prevents normal bowel movement. The presence or absence of a competent ileocecal valve plays a major role in the severity of presentation. When the valve is competent, the colon becomes a closed-loop system,

preventing decompression into the small bowel. This leads to escalating intraluminal pressures, increasing the risk of ischemia, necrosis, perforation, and systemic infection. Consequently, such patients often present in a profoundly compromised state, requiring immediate stabilization. Symptomatology can vary based on the underlying pathology and the speed at which the obstruction develops. In many instances, individuals may experience intermittent abdominal discomfort, changes in bowel habits, or unexplained weight loss prior to the acute event, especially when the obstruction is caused by a slowly growing malignancy or progressive inflammatory stricture. However, others may present suddenly and severely

with acute abdominal pain, distention, vomiting, and obstipation. Rapid recognition of these early warning signs is essential, as timely intervention markedly reduces morbidity and mortality. Prompt resuscitation—including fluid replacement, electrolyte correction, and nasogastric decompression—combined with expedited diagnostic imaging, forms the cornerstone of emergency management aimed at preventing bowel compromise and septic shock [1][2][3].

Importantly, large bowel obstruction is not only a surgical emergency but also a major diagnostic indicator of underlying colorectal carcinoma, particularly left-sided lesions. In fact, obstruction is the initial presenting feature in up to 25% of colorectal cancers, especially those located in the sigmoid or descending colon where the lumen is narrower and the stool is more formed. Studies indicate that 8% to 13% of colorectal cancer cases are obstructed at the time of diagnosis, underscoring the role of obstruction as a late manifestation of an already advanced neoplasm [4][5]. Moreover, epidemiological data reveal that colorectal carcinoma is increasingly being diagnosed in younger adults, a trend that challenges the traditional age-related risk assumptions and delays early detection. A growing proportion of these younger patients present acutely with large bowel obstruction as their first clinical manifestation, reflecting delayed diagnosis or atypical symptom recognition in this age group [5][6]. Given the severity of the condition and its significant association with malignancy, understanding the clinical presentation, risk factors, and rapid diagnostic interventions is essential. Early identification and decisive management are vital not only for immediate survival but also for improving long-term outcomes in patients whose obstruction may be the first sign of an underlying colorectal cancer [3][4][6].

Etiology

Large bowel obstruction arises from a broad spectrum of pathological processes, most of which originate within the colon itself and can be broadly categorized as neoplastic, neurogenic, inflammatory, or mechanical in nature. Intrinsic colonic pathology is frequently responsible; however, extrinsic factors can also precipitate obstruction through compressive or infiltrative mechanisms. These include mass effect from space-occupying tumors, peritoneal carcinomatosis, or fibroproliferative diseases involving the peritoneal or retroperitoneal compartments. In contemporary clinical practice, the predominant cause of large bowel obstruction in adults is colorectal carcinoma, which remains a major contributor to emergency surgical presentations. Malignant lesions may obstruct the lumen directly or present in more complex forms, such as colonic intussusception, in which a segment of bowel telescopes into an adjacent segment. A variety of other intraluminal or intramural lesions, including

adenomatous polyps, lymphomas, lipomas, and impacted fecal material, can similarly serve as a lead point for intussusception and culminate in luminal compromise. It is estimated that approximately 40% of colorectal cancers manifest with clinical emergencies, among which large bowel obstruction represents the most frequent mode of presentation [7][8]. A considerable proportion of large bowel obstructions, however, are attributable to benign intrinsic processes. Inflammatory conditions, foreign material, and colonic volvulus constitute important non-malignant etiologies. Volvulus, particularly of the sigmoid colon, is a well-recognized cause and is characterized by axial twisting of the bowel around its mesenteric attachment, resulting in both luminal and vascular compromise. Chronic or recurrent inflammation may induce progressive mural thickening and stricture formation, thereby narrowing the colonic lumen. Disorders such as diverticulitis, inflammatory bowel disease, ischemic colitis, and radiation-induced colitis are notable in this regard, as are anastomotic strictures that develop following colorectal surgery and fibrotic changes secondary to tuberculosis or trauma [8]. Intraluminal obstruction may also arise from impacted food boluses or foreign bodies. Food impaction is more frequently observed in older adults, particularly those with impaired dentition, altered swallowing mechanisms, or pre-existing colonic narrowing. Ingestion of drug packets (“body packing”) and other foreign materials may lead not only to obstruction but also to perforation if the bowel wall is compromised. Rarely, the sigmoid colon may become incarcerated within a hernial sac, most commonly in a left inguinal hernia, leading to mechanical obstruction and potential strangulation [7][8].

Extrinsic compression of the colon represents another important etiologic pathway. Pelvic and abdominal gynecologic malignancies, including ovarian and uterine neoplasms, can exert significant mass effect on the distal colon and rectum. Peritoneal carcinomatosis, with diffuse tumor seeding of the peritoneal surfaces, frequently results in multifocal adhesions and constrictive encasement of bowel loops, thereby impairing transit. Lymphadenopathy due to malignancy or chronic inflammatory conditions may similarly compromise colonic patency, particularly when enlarged nodal masses encroach upon fixed colonic segments. Inflammatory processes such as pancreatitis can extend into adjacent retroperitoneal or mesenteric structures, where edema, fat necrosis, and subsequent fibrosis can exert external pressure on the colon, culminating in obstruction [9][10]. Endometriosis is a distinctive cause of colonic obstruction that may act through both intrinsic and extrinsic mechanisms. Ectopic endometrial tissue can infiltrate the bowel wall, causing cyclical inflammation, fibrosis, and stricture formation, or can form extrinsic implants and adhesions that tether and compress the colon.

Another relatively uncommon but clinically significant cause is retroperitoneal fibrosis, characterized by chronic inflammation and deposition of dense fibrotic tissue, particularly encasing major vascular structures. This fibroinflammatory process may disrupt the normal mobility and caliber of adjacent bowel loops. Retroperitoneal fibrosis is thought to represent a systemic, regional, or localized reaction that can arise in association with advanced atherosclerosis, prior or ongoing infections, malignant disease, certain medications, or previous radiation therapy [8][11][12]. Rare etiologies of mechanical obstruction include congenital peritoneal bands, migration or erosion of medically implanted devices such as intrauterine devices, and gallstone ileus involving the colon. An illustrative case report has described acute colonic obstruction resulting from a pharmacobezoar composed of multivitamin tablets in an elderly patient, where predisposing factors included chronic constipation, a redundant sigmoid colon, and cognitive impairment due to dementia [13].

In addition to true mechanical obstruction, large bowel function can be severely impaired by pseudo-obstruction, also known as Ogilvie syndrome, which reflects a failure of colonic motility rather than a physical barrier. This condition is believed to arise from dysfunction of autonomic innervation or smooth muscle responsiveness in the colon. Pseudo-obstruction has been linked to a wide range of precipitating factors, including major trauma, recent surgery, pregnancy, localized or systemic inflammation, severe infections, chronic metabolic derangements, neurogenic disorders, exposure to certain medications—such as opioids, anticholinergics, and psychotropic agents—and chronic alcohol misuse [14]. Although no discrete occluding lesion is present, the resultant colonic dilatation and stasis may mimic mechanical obstruction clinically and radiographically, and, if not promptly recognized and managed, can progress to ischemia and perforation [14].

Epidemiology

The epidemiological profile of large bowel obstruction has evolved substantially over the last century, reflecting broader shifts in disease patterns, population aging, and advances in diagnostic and preventive strategies. At the beginning of the 20th century, volvulus was reported as the predominant cause of large bowel obstruction in many regions, particularly in populations with high-fiber diets and chronic constipation. Over the ensuing decades, however, malignant disease has progressively emerged as the leading etiology in most developed countries, coinciding with increased life expectancy and the rising burden of colorectal carcinoma [15]. Current estimates suggest that the lifetime risk of developing a malignant large bowel obstruction is approximately 6%, underscoring its significance as a

major mode of presentation for colorectal cancer. Historically, obstruction due to colorectal malignancy was most commonly observed in individuals in their fifth decade of life, paralleling the age distribution of colorectal cancer at that time. In recent years, however, widespread implementation of colorectal cancer screening programs in many developed nations has contributed to earlier detection and a reduction in the incidence of advanced, obstructing tumors among older adults. In contrast, a concerning epidemiological trend has emerged in younger populations. There has been a documented increase in colorectal malignancy among individuals younger than 50 years, many of whom have not undergone routine screening and therefore present with more aggressive, advanced-stage disease, frequently in the emergency setting with acute large bowel obstruction [16][17]. This age shift poses challenges for public health policy and raises ongoing questions about environmental, genetic, and lifestyle factors contributing to early-onset colorectal cancer [15][16][17].

A detailed contemporary analysis of large bowel obstruction was provided by Kwaan et al., who evaluated 31,277 patients admitted with this diagnosis between 2010 and 2015. In this large cohort, 54% of patients were women, 69% were White, 12% were Black, and 12% belonged to other racial groups, with a median age of 66 years. Etiologically, 20% were found to have colon cancer, 15.6% had malignancies originating outside the colon, and 64.7% had benign causes of obstruction, including diverticulitis, ischemic colitis, inflammatory bowel disease, and other non-malignant conditions [18]. The study also revealed important demographic and clinical differences between subgroups. Women with large bowel obstruction were, on average, older, had fewer comorbid illnesses, and were more likely to have extra-colonic malignancies or benign obstructive conditions rather than primary colon cancer. In contrast, Black patients tended to be younger than their White counterparts, had a higher burden of comorbidities, and exhibited a greater likelihood of presenting with obstructing colon carcinoma [18]. These findings highlight disparities that may reflect differences in access to care, screening utilization, tumor biology, and broader socioeconomic determinants of health. Among individuals with established colorectal cancer, large bowel obstruction remains a major cause of emergency presentation. Obstruction accounts for approximately 80% of emergency admissions related to colorectal cancer, whereas perforation comprises about 20% [1]. A 2017 study identified the region distal to the splenic flexure as the most common site for malignant obstruction, consistent with the tendency of left-sided tumors to produce encircling “apple-core” lesions and luminal narrowing. Perforations occur predominantly at the

tumor site itself, where transmural invasion and increased intraluminal pressure compromise bowel wall integrity, although a smaller proportion occur proximal to the tumor, often in markedly distended segments exposed to sustained pressure overload [1]. Recent data indicate that compared with previous decades, younger patients, men, and those with ascending colon lesions now have a relatively higher likelihood of presenting emergently with colonic obstruction, suggesting changing patterns in tumor location, biology, and health-seeking behavior [5].

Pseudo-obstruction, or acute colonic pseudo-obstruction, represents a distinct but clinically important entity within the spectrum of large bowel distension syndromes. It occurs more frequently in men older than 60 years, many of whom are critically ill or hospitalized for other serious medical or surgical conditions. In the United States, its incidence has been reported at approximately 0.1% of inpatient admissions [14]. Although no mechanical blockage is present, the consequences of prolonged colonic dilatation can be severe. When pseudo-obstruction progresses to bowel ischemia or perforation, mortality rates may reach 44% [14]. Among patients diagnosed with pseudo-obstruction, the risk of cecal perforation is estimated at 15%, and in those who experience perforation, mortality can be as high as 50% [19]. The duration and degree of distension are key determinants of this risk, underscoring the need for early recognition and timely decompression. The epidemiology of volvulus further illustrates age-related patterns within large bowel obstruction. Sigmoid volvulus tends to occur in older individuals, with an average age of approximately 70 years, often in the context of chronic constipation, neuropsychiatric disease, or institutionalization. By contrast, cecal volvulus more commonly affects relatively younger adults, typically in their fifth decade of life, and may be associated with congenital anomalies of fixation or prior abdominal surgery [14]. Collectively, these epidemiologic insights emphasize the heterogeneity of large bowel obstruction across age groups, etiologies, and populations, highlighting the importance of tailored diagnostic and therapeutic strategies [14][16][18].

Pathophysiology

The pathophysiological cascade of large bowel obstruction reflects the complex interplay between mechanical obstruction, progressive luminal distention, impaired vascular perfusion, and subsequent systemic inflammatory responses. In the presence of a competent ileocecal valve, the obstructed colonic segment becomes a closed-loop system that neither allows upstream decompression into the small bowel nor permits downstream passage of gas or fecal material. As intraluminal contents accumulate, bacterial fermentation and gas production further accelerate luminal distention. This progressive enlargement initially impedes venous

return from the colonic wall, resulting in marked venous congestion and edema. As distention advances, intramural pressure rises to the point where arterial inflow becomes compromised, depriving the bowel wall of oxygenated blood. The sequence evolves from reversible mucosal ischemia to full-thickness necrosis and gangrene, and ultimately to perforation if the obstruction is not relieved in a timely manner [1][12]. Anatomically, the cecum is uniquely vulnerable to perforation because it has the largest luminal diameter and the thinnest muscular wall. According to Laplace's law, wall tension increases proportionally with the radius, making the cecum the site most likely to rupture under conditions of high intraluminal pressure. Once ischemia develops, the mucosal barrier—already stressed by hypoxia—undergoes significant breakdown. Loss of mucosal integrity permits translocation of gut flora, fostering bacteremia, systemic sepsis, and widespread inflammatory responses. As motility becomes severely impaired, luminal stasis promotes bacterial overgrowth and, in advanced cases, fecalization of the small bowel. These changes contribute to a heightened risk of septic complications, particularly in older adults or those with underlying comorbidities [1][12].

In contrast to true mechanical obstruction, acute colonic pseudo-obstruction develops as a result of functional derangements in autonomic regulation rather than from a physical barrier. The prevailing hypothesis attributes this syndrome to excessive sympathetic nervous system activity coupled with impaired parasympathetic stimulation of the colon. The resultant imbalance inhibits peristalsis and colonic propulsion. Stimulation of intramural mechanoreceptors by colonic distention further suppresses motility, creating a vicious cycle of ongoing dilation and ineffective colonic emptying. This dysautonomia may arise from diverse underlying conditions, including severe systemic illness, infection, trauma, electrolyte abnormalities, exposure to certain medications (particularly opioids and anticholinergics), or chronic neurologic and metabolic diseases [14]. Volvulus represents a distinct mechanical subtype of large bowel obstruction characterized by axial twisting of a colonic segment around its mesenteric pedicle. Several anatomic and physiological predispositions contribute to its development. Inadequate or absent peritoneal fixation allows excessive colonic mobility, while a redundant or elongated colon provides increased rotational potential. Thinning of the colonic mesentery, often associated with chronic constipation, age-related degeneration, or prolonged laxative use, further destabilizes the colonic segment, making it prone to torsion. The combination of these factors results in luminal occlusion and vascular compromise, akin to that seen in other forms of mechanical obstruction. If untreated, volvulus can rapidly progress to ischemia, necrosis, and perforation [1][12][14][20].

Collectively, the pathophysiology of large bowel obstruction encompasses mechanisms that threaten both local bowel viability and systemic stability. Whether due to a fixed anatomic obstruction, functional dysmotility, or catastrophic twisting of the colon, the downstream consequences include loss of mucosal integrity, bacterial translocation, septic shock, and life-threatening perforation. Understanding these mechanisms is critical for timely diagnosis and intervention, allowing clinicians to interrupt the cycle of distention, ischemia, and systemic decompensation before irreversible damage occurs [14][20].

History and Physical

The history and physical examination of a patient with suspected large bowel obstruction are pivotal in narrowing the differential diagnosis, identifying the underlying etiology, and determining the urgency of intervention. Clinical manifestations are influenced by both the cause of obstruction and its anatomical location. In general, patients commonly report abdominal pain, progressive distension, reduced or absent passage of flatus and stool, and varying degrees of nausea and vomiting. The character of the pain may initially be colicky due to peristaltic efforts against an obstructed lumen, later becoming constant as distension increases and ischemia develops. The functional status of the ileocecal valve is an important determinant of symptom evolution. When the ileocecal valve is incompetent, colonic contents may decompress proximally into the small bowel, often leading to earlier onset of vomiting as small intestinal distension progresses. Conversely, in the setting of a competent ileocecal valve, the colon functions as a closed-loop system in which continued gas and fluid accumulation cause escalating colonic distension. In such patients, mounting right lower quadrant or right iliac fossa pain may herald impending cecal ischemia and perforation. On physical examination, abdominal distension is frequently evident, with tympany on percussion and variable tenderness. A rectal examination is essential and may disclose an empty rectal vault, suggesting a more proximal obstruction, or it may reveal a palpable mass, hard stool, or the presence of blood, each of which may provide additional diagnostic clues [21].

When the obstruction is attributable to colorectal malignancy, the history often reveals more insidious changes preceding the acute event. Malignant obstruction most frequently involves the descending colon, sigmoid colon, or rectum, where the luminal diameter is relatively narrow and fecal content is more solid. In this context, patients may describe a prodrome of altered bowel habits, commonly in the form of alternating constipation and diarrhea, as liquid stool intermittently passes around a progressively constricting lesion. Symptoms may

be present for weeks or months before complete obstruction occurs and can include unexplained weight loss, fatigue, abdominal discomfort, rectal bleeding, or iron deficiency anemia. Nevertheless, in some individuals, particularly those without regular medical follow-up or screening, the first clinical manifestation may be a sudden, high-grade obstruction with severe distension and pain. Family history of colorectal carcinoma may or may not be present, and its absence does not exclude malignancy. On examination, abdominal distension and localized or diffuse tenderness may be noted, and rectal examination may identify a distal mass or gross blood, particularly in rectal or distal sigmoid tumors [21][22].

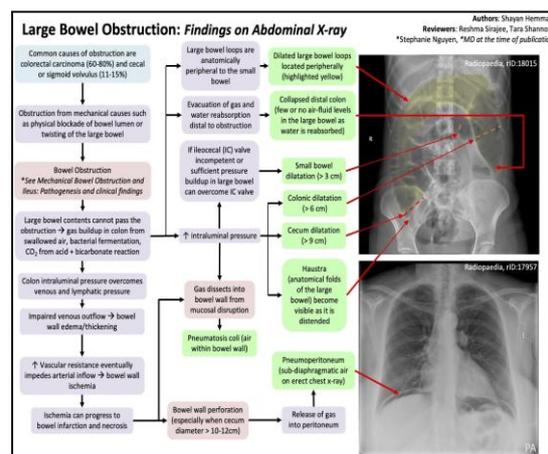


Fig. 1: Large Bowel Obstruction Findings.

Volvulus-associated obstruction demonstrates a somewhat different clinical pattern. Sigmoid volvulus is especially common in older individuals with chronic constipation, neuropsychiatric disease, or reduced mobility, such as residents of long-term care facilities. These patients often have a history of longstanding bowel irregularity, laxative use, and progressive abdominal distension. The onset of volvulus is typically abrupt, with sudden abdominal pain, marked distension, cessation of flatus and stool, and rapid worsening of discomfort. On physical examination, the abdomen is usually strikingly distended and tympanic, and may exhibit guarding and rebound tenderness, particularly if ischemia or perforation has supervened [23]. Cecal volvulus, by contrast, may clinically resemble a small bowel obstruction, with variable symptom duration and intermittent episodes of pain and distension, depending on the degree of torsion and spontaneous partial untwisting. In rare situations, volvulus of either the sigmoid or cecum may present with shock, reflecting fulminant ischemia and perforation, or may follow a more chronic, intermittent course with recurrent, self-limited episodes of obstruction [14]. Patients with acute colonic pseudo-obstruction, or Ogilvie syndrome, can be challenging to distinguish from those with mechanical obstruction based solely

on history and physical examination. They frequently present with progressive abdominal distension and may report discomfort, bloating, or a sense of fullness rather than severe colicky pain. Passage of flatus or even stool may continue in the early stages, and bowel habits can range from constipation to diarrhea. Affected individuals are often hospitalized for other serious medical or surgical conditions, and the pseudo-obstruction may develop insidiously during their inpatient stay. On examination, the abdomen is distended and tympanic, but tenderness is usually mild in the absence of ischemia or perforation. The relative paucity of pain compared with the degree of distension, together with the clinical context of recent surgery, severe systemic illness, or exposure to predisposing medications, may raise suspicion for pseudo-obstruction rather than a primary mechanical cause [14][19].

Other etiologies produce additional characteristic clinical constellations. In diverticular disease-related obstruction, a history of recurrent left lower quadrant pain, previous episodes of diverticulitis, or chronic bowel habit changes may be elicited. Patients can present with localized pain, fever, and leukocytosis, and on examination, focal tenderness and sometimes a palpable inflammatory mass may be appreciated in the left lower quadrant, with distension proximal to the obstructed segment. Obstruction secondary to hernia may present with a visible or palpable mass at a known hernial site, such as the inguinal, spigelian, lumbar, diaphragmatic, or intermesenteric regions. The hernia may be reducible or irreducible and can demonstrate overlying skin erythema, warmth, or tenderness suggestive of incarceration or strangulation. A careful examination of all potential hernia orifices is therefore vital in any patient with suspected bowel obstruction. Endometriosis-associated colonic obstruction often affects women of reproductive age and is frequently accompanied by a history of cyclical pelvic pain, dysmenorrhea, dyspareunia, rectal pain, or pain during defecation. Symptoms may worsen during menses, and a background of infertility or prior gynecologic interventions may be present. Similarly, colonic obstruction due to uterine fibroids or pelvic malignancies may be heralded by abnormal uterine bleeding, irregular menstrual cycles, pelvic pressure, or urinary frequency. In these settings, abdominal and pelvic examination may reveal adnexal or uterine enlargement, pelvic masses, or tenderness. Obstruction resulting from stool impaction is more often encountered in patients with longstanding constipation, reduced mobility, neurologic disorders, or medications that impair colonic motility, such as opioids, anticholinergics, or certain psychotropics. Frail older adults, individuals with dementia, and those with psychiatric illness are particularly vulnerable. These patients commonly report abdominal distension, discomfort, and sometimes paradoxical fecal incontinence due to overflow

around an impacted stool mass. A digital rectal examination is crucial and may reveal a large, hard fecaloma in the rectum, occasionally associated with mucosal ulceration—so-called stercoral ulceration—which carries a risk of perforation [19][20].

Retroperitoneal fibrosis, although rare, can present with a constellation of back, flank, and abdominal pain, often accompanied by systemic symptoms such as fever, fatigue, and unintentional weight loss. The insidious nature of this condition may delay diagnosis, and imaging is typically required to demonstrate retroperitoneal mass-like encasement of vessels and bowel. Colonic intussusception in adults, frequently associated with an underlying neoplastic lead point, presents with nonspecific symptoms that can include intermittent or persistent abdominal pain, nausea, vomiting, altered bowel habits, hematochezia, and occasionally a palpable mass. The clinical picture can be subtle, necessitating a high index of suspicion and reliance on radiologic evaluation [8][21]. A patient with colonic perforation, whether from malignant obstruction, diverticular disease, stercoral ulceration, or ischemic necrosis, typically appears acutely unwell, with significant physiologic derangement. The pain is often sudden in onset, sharp, and may radiate to the pelvis, epigastrium, or chest. Fever, chills, nausea, and vomiting are common accompaniments. On examination, signs of peritonitis predominate, including diffuse abdominal tenderness with guarding, rigidity, and rebound, as well as absent bowel sounds. Tachycardia, hypotension, tachypnea, and other features of systemic inflammatory response may be present, indicating evolving septic shock and the need for immediate resuscitation and surgical evaluation [24]. Together, these varied historical and physical findings provide essential clues to the underlying cause and severity of large bowel obstruction, guiding timely diagnostic imaging and appropriate intervention.

Evaluation

The assessment of a suspected large bowel obstruction requires a systematic and integrated approach that combines a detailed clinical history, a thorough physical examination, and targeted diagnostic investigations. Early identification of physiological derangements is crucial, as many patients present with varying degrees of dehydration, electrolyte imbalance, and potential sepsis. Initial laboratory testing typically includes a complete blood count to evaluate for anemia or leukocytosis, basic metabolic and renal function panels to assess electrolyte levels and kidney status, and serum lactate or arterial blood gases when tissue hypoperfusion or acidosis is suspected. Leukocytosis and metabolic acidosis may be important indicators of evolving bowel ischemia or necrosis and therefore prompt more urgent intervention [25][26][27]. Assessment for *Clostridium difficile* infection is relevant in patients with recent antibiotic exposure or healthcare-

associated diarrhea, particularly when toxic colitis is a consideration. Correction of electrolyte disorders is not only supportive but also essential for safe administration of intravenous contrast in imaging studies and for optimizing bowel motility in cases where pseudo-obstruction is suspected [14]. Imaging plays a central role in confirming the diagnosis, delineating the level and cause of obstruction, and identifying complications such as ischemia or perforation. The initial radiologic evaluation often begins with plain abdominal radiographs, typically including supine and upright or decubitus views. These images may demonstrate a dilated colon proximal to the obstructing lesion, with a paucity or absence of gas distally, particularly in the rectum. Air-fluid levels within the colon are frequently seen and may suggest a mechanical obstruction. Plain films can also occasionally reveal signs of perforation or advanced ischemia, such as free intraperitoneal air (pneumoperitoneum), intramural gas, or gas within the portal venous system, all of which herald serious complications and mandate urgent management [19][28][29].

Distinguishing a mechanical large bowel obstruction from other causes of colonic distension, such as ileus or acute colonic pseudo-obstruction, is a key diagnostic challenge. Ileus is often associated with recent surgery, systemic illness, neurologic or metabolic disturbances, and is characterized radiographically by diffuse gaseous distension of both small and large bowel without a discrete transition point. In contrast, mechanical obstruction usually demonstrates a clear transition between dilated proximal and decompressed distal bowel. Instillation of a water-soluble contrast enema can be particularly helpful in differentiating mechanical obstruction from pseudo-obstruction, as contrast progresses more uniformly in the latter. Toxic megacolon, which may occur in the context of severe colitis, is suggested by colonic dilation in combination with bowel wall thickening and systemic toxicity. Evaluating patients in different positions can clarify gas patterns and air-fluid distribution; notably, pseudo-obstruction often lacks the pronounced air-fluid levels typical of mechanical obstruction. Despite the utility of plain radiographs, establishing the precise etiology and anatomical details of large bowel obstruction frequently requires cross-sectional imaging. Computed tomography (CT) of the abdomen and pelvis has become the modality of choice in most clinical scenarios because it can localize the obstruction, identify a transition point, and characterize the underlying cause. CT is particularly valuable in detecting occult hernias, defining inflammatory changes, recognizing ischemic bowel, and assessing for metastatic disease when malignancy is suspected [19]. Intravenous contrast enhances visualization of bowel wall perfusion and mesenteric vasculature and is therefore recommended

when not contraindicated. Oral contrast is generally avoided in the setting of suspected obstruction due to the risk of worsening distension and aspiration. When additional clarification is needed, water-soluble rectal contrast may be administered to opacify the distal colon, aiding in the diagnosis of volvulus, distal strictures, or mass lesions. Rectal contrast enemas also play a role when endoscopic evaluation is planned, especially if a colonoscopy with biopsy is under consideration [8][19].

Colonoscopy can serve both diagnostic and therapeutic roles in selected patients. Performed with minimal insufflation to reduce the risk of perforation, it enables direct visualization of the mucosa, biopsy of suspected malignancies or inflammatory lesions, and, in some cases, decompression of a sigmoid volvulus or placement of a stent in malignant obstruction. Colonoscopy may also establish a diagnosis of conditions such as endometriosis when mucosal involvement is present [8][19]. In the context of suspected or confirmed colorectal cancer, a complete evaluation of the entire colon is critical because synchronous neoplasms occur in a notable minority of patients. When full colonoscopy is not feasible—owing to obstruction, patient instability, or technical limitations—CT or positron emission tomography (PET) may be employed to screen for additional lesions and distant metastases [5]. Certain obstructive patterns have characteristic radiologic signatures. Sigmoid and cecal volvulus can often be recognized on plain radiographs. A sigmoid volvulus typically produces the classic “coffee bean” configuration or a massively dilated U-shaped loop that may extend into the right upper quadrant or above the transverse colon. Cecal volvulus, on the other hand, may present as a distended cecum displaced from its usual right lower quadrant location, sometimes looping into the left upper quadrant; the appendix, if air-filled, may also appear in an ectopic position. Less commonly, volvulus can involve the transverse colon or splenic flexure. CT not only confirms the presence of volvulus by demonstrating the “whirl sign” of twisted mesentery and the beak-like tapering of contrast at the twist, but also assesses the viability of the bowel wall and identifies areas of ischemia or perforation. Water-soluble contrast enemas can further delineate the torsion and, in some cases, may even reduce a sigmoid volvulus nonoperatively [19].

CT imaging provides important insights into other etiologies of large bowel obstruction as well. Diverticular disease-associated obstruction is often characterized by symmetric circumferential wall thickening, hyperemia, and prominent fat stranding in the pericolic tissues. Associated findings such as pericolic abscesses, free fluid, or inflammatory changes at the root of the mesentery may also be evident. By contrast, colonic malignancy more commonly produces shorter segments of asymmetric

wall thickening, often with shouldered edges and adjacent lymphadenopathy. Intussusception appears as a complex mass with concentric layers on CT, typically demonstrating mesenteric fat and vessels telescoped into the lumen—features that produce the classic “target” or “sausage-shaped” appearance. Inflammatory bowel disease causing obstruction may show segmental wall thickening, strictures with luminal narrowing, mural hyperenhancement in areas of active inflammation, and complications such as fistulae or abscess formation. In all such cases, the possibility of coexistent or underlying malignancy must be carefully considered, particularly in long-standing disease [19]. In acute colonic pseudo-obstruction, CT often reveals marked colonic dilation, most prominently involving the cecum and ascending colon, with gas often visible throughout to the rectum. Crucially, no discrete mechanical transition point is identified, distinguishing pseudo-obstruction from true obstructive lesions. Recognition of this pattern is essential because management emphasizes decompression and reversal of precipitating factors rather than immediate surgery [19].

Beyond conventional CT and colonoscopy, additional diagnostic modalities have gained prominence. In 2020, the European Society of Gastrointestinal Endoscopy (ESGE) and the European Society of Gastrointestinal and Abdominal Radiology (ESGAR) issued updated guidelines recommending alternatives to colonoscopy for evaluating suspected colonic malignancy. CT colonography, also known as virtual colonoscopy, is advocated when standard colonoscopy is contraindicated, incomplete, or not feasible, offering high-resolution visualization of the colonic lumen and wall. Colon capsule endoscopy, which involves ingestion of a video capsule that transmits images as it traverses the gastrointestinal tract, represents another noninvasive alternative, particularly useful in patients who cannot tolerate conventional endoscopy [30]. Overall, the evaluation of large bowel obstruction is a dynamic process that integrates clinical judgment with laboratory and multimodal imaging data. Prompt, accurate differentiation between mechanical obstruction, pseudo-obstruction, and ileus, as well as timely identification of ischemia or perforation, are essential to guide appropriate and often time-sensitive therapeutic interventions.

Treatment / Management

The management of large bowel obstruction is multifaceted and requires a structured approach that prioritizes hemodynamic stabilization, accurate diagnosis, timely decompression, and definitive treatment tailored to the underlying etiology. Initial management focuses on resuscitation and correction of metabolic derangements, followed by consideration of endoscopic, radiologic, or surgical interventions, depending on the site and cause of obstruction, the presence or absence of perforation or

ischemia, and the overall physiological reserve of the patient. Throughout the course of care, multidisciplinary coordination is critical to optimizing outcomes and reducing morbidity and mortality. In the acute setting, the first priority is stabilization of the patient. A detailed history and physical examination are conducted concurrently with the initiation of resuscitative measures. Fluid resuscitation is paramount, as many patients present with significant dehydration secondary to decreased oral intake, vomiting, third-spacing of fluids into the bowel lumen and peritoneal cavity, and sepsis. Intravenous crystalloids are administered to restore intravascular volume and improve tissue perfusion. Close monitoring of urine output, blood pressure, heart rate, and mental status is essential to gauge the adequacy of resuscitation. Laboratory investigations including complete blood count, serum electrolytes, lactate, renal function, and arterial blood gases guide ongoing management. Electrolyte abnormalities, particularly hypokalemia and metabolic acidosis, must be corrected promptly, as they can exacerbate ileus, predispose to arrhythmias, and complicate anesthetic and operative risk [25][26][27]. Patients with marked cecal distension persisting over several days are at particularly high risk for ischemia and perforation and should be considered for early decompressive measures. Serial abdominal examinations and imaging are crucial for monitoring the evolution of distension. Cross-sectional imaging or repeat radiographs can identify progressive dilation, pneumatosis intestinalis, or free air, all of which indicate a deteriorating condition. The presence of pneumatosis within the cecum or colon is especially worrisome, as it frequently reflects bowel wall ischemia and impending perforation. In patients with colonic obstruction and an incompetent ileocecal valve, nasogastric tube placement can assist with proximal decompression of the gastrointestinal tract by reducing gastric and small bowel distension, thereby improving patient comfort and reducing the risk of aspiration [26][27].

In the setting of perforation, the primary therapeutic objective is rapid and effective source control. A perforation proximal to an obstructing tumor often results in diffuse fecal contamination of the peritoneal cavity and rapid onset of sepsis or septic shock. In such circumstances, damage control principles should be applied. Following initial resuscitation, definitive or temporizing surgical intervention should generally be undertaken within approximately six hours when feasible, since delays in achieving source control are associated with worse outcomes. Hemodynamic targets often include a central venous pressure between 8 and 12 mm Hg, a mean arterial pressure greater than 65 mm Hg, and a central venous oxygen saturation of at least 70%. Achievement of these goals may require vasopressor support, including norepinephrine or epinephrine, as well as inotropic therapy and, when severe metabolic

acidosis is present, judicious use of alkalinizing agents. Broad-spectrum antibiotics are administered early to cover gram-negative and anaerobic organisms that commonly translocate from the compromised colon. In obstructed but nonperforated states, antimicrobial coverage is directed against colonic flora to reduce the risk of progression to sepsis from bacterial translocation. Perforation mandates expansion of coverage to include agents effective against polymicrobial peritonitis. Where abscesses are present, image-guided percutaneous drainage constitutes an important adjunct to operative or nonoperative source control [1]. Once the patient is hemodynamically stabilized, attention turns to specific interventions to relieve the obstruction. The urgency of intervention is dictated by the clinical picture. Signs of peritonitis, radiologic or laboratory evidence of ischemia, sepsis, and hemodynamic compromise all mandate prompt action. In patients with large bowel obstruction without overt perforation or severe sepsis, clinicians must decide between emergent definitive surgery and temporizing measures that serve as a bridge to elective, more controlled operations. The choice is influenced by the location of the obstruction, the suspected etiology, the patient's comorbidities, and institutional expertise [1].

Treatment strategies for left- and right-sided colonic obstructions differ in several respects. Early decompression is generally emphasized for both, but left-sided lesions, often caused by rectosigmoid malignancy, are particularly amenable to endoscopic stenting as a bridge to surgery. For left-sided malignant obstructions, placement of a self-expanding metal stent can rapidly relieve luminal occlusion, thereby improving bowel preparation, allowing optimization of comorbid conditions, and facilitating a single-stage elective resection with primary anastomosis instead of emergent multi-stage surgery with colostomy. These bridging strategies have to be weighed against potential risks, including perforation, tumor dissemination, and stent-related complications [5]. Additional considerations include the presence of macro- or micro-perforation, which might enhance the risk of malignant seeding, as well as comorbidities such as diabetes mellitus, cirrhosis, or advanced cardiopulmonary disease that may increase perioperative risk and favor staged or less invasive approaches. Endoscopic stenting has emerged as a central modality in the management of malignant large bowel obstruction. Traditionally, emergency surgery for obstructing colorectal cancer often necessitated a stoma and was associated with substantial morbidity and mortality. Stoma formation, while lifesaving, carries long-term quality-of-life implications, and many temporary stomas are never reversed. Bridging procedures using self-expanding metal stents allow time for patient optimization, complete staging, and careful planning of oncologic

surgery, frequently enabling single-stage resection with primary anastomosis and avoidance of permanent or long-term diversion [4]. In malignant obstruction, stent placement has been associated with decreased complications, shortened operative times, and reduced rates of stoma formation, particularly for left-sided lesions. For right-sided malignant obstructions, although data are more limited, stenting has also been associated with improved short-term outcomes, reduced postoperative complications, and lower mortality in some series [4].

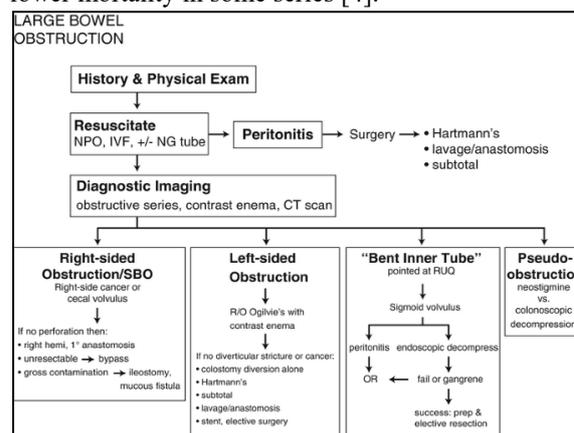


Fig. 2: Management and treatment of large bowel obstruction.

Historically, concerns about stenting included technical difficulties, high perforation rates, and uncertain oncologic implications. Early ESGE guidelines issued in 2014, for instance, were cautious regarding the use of stents as a bridge to surgery, largely due to these perceived risks. However, advances in endoscopic techniques, device technology, and practitioner experience have led to improved success rates and fewer complications. More recent evidence has supported stenting as an acceptable alternative to emergency surgery in carefully selected patients with malignant obstruction, particularly older or high-risk individuals. Comparative studies have demonstrated similar long-term oncologic outcomes between stenting and emergent surgery, with advantages favoring stenting in terms of shorter hospital stay and reduced need for permanent stomas [5][6]. Self-expanding metal stents are currently approved by regulatory agencies such as the Food and Drug Administration for use in malignant large bowel obstruction. In benign obstructive processes, stenting is generally considered off-label. Benign strictures tend to be longer, more inflamed, and more prone to tissue ingrowth around the stent, all of which increase the risks of migration, reobstruction, and perforation. For benign disease, balloon dilation or surgical management remains the more traditional approach, although off-label stent use may be considered in selected high-risk patients. Experimental endoscopic and percutaneous decompressive techniques may also be used in challenging cases where standard methods

fail or are contraindicated [8][31]. Indications for colonic stenting continue to be refined. The 2020 ESGE update recommends stenting as a bridge to surgery for patients aged 70 years or older with ASA class III status who have potentially curable left-sided colon cancer, as well as for patients requiring palliation of inoperable malignant obstruction. In these contexts, surgery is generally planned within 5 to 10 days after stent placement, allowing for clinical optimization and oncologic planning while minimizing stent-related risks such as migration or perforation [32]. Pavlidis et al. suggest that for younger, fit patients under 70 years of age, emergency surgery with primary anastomosis, with or without proximal diversion, remains an appropriate strategy, particularly in centers with expertise in complex colorectal emergencies [5]. The American Society of Colon and Rectal Surgeons also supports the selective use of stenting for malignant obstruction, taking into account institutional experience and individual patient factors, and reports technical success rates in the range of 77% to 81%. However, given concerns about possible increased recurrence and the identification of synchronous lesions after stenting, segmental resection or subtotal colectomy following stenting is recommended to ensure adequate oncologic control [33].

From a technical standpoint, colonic stents used for large bowel obstruction are generally either covered or uncovered, with diameters between 10 and 25 mm and lengths from 12 to 60 mm. Uncovered metal stents are typically preferred in malignant obstruction because they demonstrate better anchorage, lower migration rates, and longer patency, albeit at the cost of tissue ingrowth. Covered stents, while associated with less tumor ingrowth and easier removal, are more prone to migration and are therefore less commonly utilized in the colon. Off-label placement of covered stents for benign disease has been reported but is not yet supported by robust outcome data [5][34]. Stent deployment is usually performed endoscopically using a colonoscope under fluoroscopic guidance. After passing a guidewire across the obstruction, the stent is advanced and released, often using radiopaque markers for accurate positioning. Post-procedural management includes a plain radiograph to verify stent position and to exclude immediate complications such as perforation or malposition [35]. The potential risks of stenting include perforation, bleeding, stent migration, and, in the oncologic context, concern for tumor dissemination. However, technical refinements have substantially reduced major complications in experienced centers. For example, a Japanese study involving 202 patients with malignant colonic obstruction who received low axial force self-expanding metal stents reported technical and clinical success rates of 97.5% and 97%, respectively, with no perforations observed [36].

Oncologic concerns related to stenting center on possible stimulation of tumor spread, particularly perineural or lymphatic invasion. Some observational studies have noted higher rates of perineural invasion in resected specimens after stenting and have raised questions as to whether this is a consequence of the procedure itself or a marker of more advanced disease. One study identified stenting as an independent risk factor for perineural invasion, but the authors hypothesized that increased invasion may reflect the inherent biology of more severe obstructions rather than an iatrogenic effect of stent placement, with elevated intraluminal pressures driving local invasion [37]. A meta-analysis reported higher rates of perineural and lymphatic invasion and a decrease in overall survival in patients who had undergone stenting compared to those managed with emergent surgery. Another meta-analysis suggested higher recurrence rates after stenting compared with emergency colostomy, with the stoma group exhibiting lower 90-day mortality than those who underwent emergent colectomy or stenting as a bridge to surgery. The same analysis highlighted higher overall costs in the stent group but also noted that eventual anastomoses were more frequently achieved in the group initially treated with a stoma [38]. In response to these concerns, some protocols now recommend administering two cycles of systemic chemotherapy—typically fluorouracil, leucovorin, and oxaliplatin—following stent placement for malignant obstruction before proceeding to definitive resection, in an effort to mitigate any theoretical risk of tumor dissemination [6].

Alternative bridge-to-surgery strategies include endoscopic balloon dilation and decompression with nasogastric or rectal tubes. Balloon dilation is particularly useful for benign strictures, such as anastomotic narrowing or inflammatory strictures in conditions like Crohn disease or post-radiation fibrosis. During dilation, the balloon catheter is advanced over a guidewire across the stricture, inflated with saline (often mixed with dilute contrast under fluoroscopy), and then deflated and removed. Balloon size is carefully selected to match the lumen and minimize the risk of perforation. Although initial success rates of up to 89% after a single dilation have been reported, recurrent obstruction occurs in as many as 50% of patients within five years, often necessitating repeated procedures or eventual surgery. Decompression using nasogastric or rectal tubes may temporarily alleviate distension but does not address the underlying lesion and has generally been associated with less favorable short-term outcomes compared to stenting [5][35]. Surgical management remains central in the treatment of malignant large bowel obstruction and many benign causes. The range of surgical options spans from definitive single-stage oncologic resections with primary

anastomosis to staged procedures involving initial diversion and delayed reconstruction, as well as purely palliative operations for advanced or nonresectable disease. For patients with early-stage, nonmetastatic obstructing colorectal cancer, resection with primary anastomosis is often feasible and may be followed by adjuvant chemotherapy as indicated. Two-stage procedures, such as initial diverting colostomy with subsequent resection and reanastomosis, continue to play a role, particularly in high-risk or unstable patients. Minimally invasive approaches, especially laparoscopy, have been associated in experienced hands with fewer postoperative complications and improved three-year overall and disease-free survival compared to open procedures [5][39].

The decision between single-stage and multi-stage surgery is influenced by patient age, ASA status, comorbidities, the presence of peritonitis or sepsis, tumor location, and the surgeon's expertise. For relatively young patients under 70 years with ASA class I or II and limited comorbidities, a single-stage operation that includes colonic washout, resection, and primary anastomosis is generally recommended in the absence of perforation or severe sepsis. However, a study of 600 patients with right-sided malignant obstruction demonstrated higher immediate complication and mortality rates in those undergoing single-stage procedures compared to multi-stage operations, even though five-year overall and disease-free survival rates were similar between the groups [40]. A Japanese study also identified increased 90-day mortality in patients older than 75 years undergoing primary resection for obstructed colon cancer, underscoring the need for individualized operative planning in older adults [41]. For perforated colon cancer, the World Journal of Emergency Surgery (WJES) guidelines recommend resection with anastomosis when the perforation occurs at the tumor site and the patient is not septic, regardless of whether the lesion is right- or left-sided. When a left-sided cancer perforates proximally rather than at the tumor itself, a subtotal colectomy may be appropriate. In such cases, the guidelines recommend, if possible, limited resection of the terminal ileum with preservation of a distal colon segment above the peritoneal reflection to mitigate severe diarrhea and fecal incontinence. There are no randomized controlled trials directly comparing primary anastomosis with diverting stoma in this context, and reported rates of anastomotic leak overlap considerably between emergent and elective surgery. The WJES supports resection with anastomosis for right-sided obstructing cancers and suggests internal bypass procedures or stenting for nonresectable and palliative situations. For right-sided stenting, a self-expanding through-the-scope stent may be used. In locally advanced rectal cancers, neoadjuvant chemoradiotherapy is the standard of

care, and a transverse colostomy may be utilized for decompression. Notably, the WJES states that the presence of stool in the colon at the time of surgery does not appear to increase the risk of anastomotic dehiscence [1].

Controversy persists regarding the optimal surgical and endoscopic strategy in both curative and palliative settings, particularly for left-sided obstructions. The debate often centers on whether to perform single- versus two-stage operations, and whether stenting or diverting colostomy should be used as the initial decompressive intervention. Although stomas can be lifesaving, many are never reversed, and reversal itself carries significant morbidity and mortality. Stenting as a palliative measure may be preferable in some cases because it avoids a stoma, reduces hospital stay, and improves early quality of life. Studies comparing stenting to colostomy have reported similar overall morbidity but shorter recovery times for stenting. However, stent-related complications such as migration and perforation, especially in patients receiving antiangiogenic agents like bevacizumab, can increase morbidity and mortality. Concerns also persist about the potential for stenting to promote tumor dissemination, lymph node invasion, and higher recurrence rates, though many comparative studies have not demonstrated significant differences in three- or five-year mortality between stenting and emergency surgery [1]. Etiology-specific interventions are a crucial component of management. In sigmoid volvulus, endoscopic decompression with a rigid or flexible sigmoidoscope is generally the first-line treatment. Successful detorsion is followed by placement of a rectal tube to allow continued evacuation of gas and reduce the likelihood of early recurrence. Despite successful decompression, many patients ultimately require elective sigmoid resection or colectomy to prevent recurrence, as recurrent volvulus is common. Failure to decompress endoscopically, or evidence of ischemia, perforation, or peritonitis, necessitates urgent surgical intervention, usually in the form of sigmoid resection with or without colostomy [1][42][43]. Cecal volvulus, in contrast, often requires earlier operative management because endoscopic decompression is less successful. Surgical options include right hemicolectomy with primary anastomosis or ileocecal resection; in select stable patients with viable bowel, cecopexy may be considered, though cecostomy is generally associated with higher complication and mortality rates and is reserved for patients who cannot tolerate more extensive surgery.

Incarcerated or strangulated hernias that cause large bowel obstruction require prompt assessment. While some incarcerated hernias may be reducible, irreducible or painful hernias with systemic signs of sepsis or ischemia demand urgent

operative exploration and repair, often with resection of nonviable bowel [14]. For obstruction due to endometriosis, treatment options include segmental resection of involved bowel or, in selected cases, temporary stenting to relieve obstruction prior to definitive gynecologic and colorectal surgery. Retroperitoneal fibrosis, when responsible for colonic narrowing, may respond partially to steroids or other immunosuppressive agents; nonetheless, significant mechanical obstruction usually necessitates surgical bypass or resection. In any instance of colonic stricture of uncertain etiology, malignancy must be excluded with biopsy and appropriate imaging before a definitive intervention plan is finalized [8]. Functional obstruction from acute colonic pseudo-obstruction is managed differently from mechanical causes. Neostigmine, an acetylcholinesterase inhibitor, has been shown to induce rapid decompression in up to 94% of patients by enhancing colonic motility. The standard regimen is 2 mg of intravenous neostigmine administered slowly under cardiac monitoring because bradycardia is a common side effect that may require atropine. If neostigmine fails or is contraindicated, options include colonoscopic decompression or, rarely, surgical decompression or resection. Operative intervention carries high risk in this population due to advanced age, comorbidities, and severely distended, often friable bowel [14][19]. Patients with signs of impending perforation, cecal ischemia, or fecal peritonitis require emergent intervention, which may include cecostomy on viable bowel or right hemicolectomy with ileocolic anastomosis. Tube cecostomy can be performed using open, laparoscopic, or percutaneous techniques and may be appropriate for stable patients who fail conservative and pharmacologic measures [14].

A variety of adjunct and alternative interventions have been explored in selected patients. Endoscopic laser coagulation may facilitate dilation of benign strictures, but successful and durable outcomes depend on addressing the underlying pathology, such as instituting antituberculous therapy for tuberculous strictures. In cases of obstructing fecal impaction without perforation, digital disimpaction or enemas can relieve obstruction and should be followed by an ongoing bowel regimen to prevent recurrence. Novel nonsurgical strategies, such as the use of fibrin glue for fistula closure or contained perforations, have been described but are associated with high recurrence rates. Advanced endoscopic techniques—including through-the-scope and over-the-scope clips, endoscopic suturing, and tracking systems—have been employed in highly selected situations for managing colonic defects and perforations but are not yet standard of care in the setting of acute large bowel obstruction [35].

In summary, the treatment and management of large bowel obstruction require an individualized, etiology-driven strategy that integrates aggressive

resuscitation, timely decompression, and definitive anatomic correction while considering the patient's overall condition and long-term oncologic prognosis. With careful application of endoscopic, radiologic, and surgical modalities, and adherence to evolving evidence-based guidelines, clinicians can significantly reduce morbidity and mortality while enhancing functional and oncologic outcomes for patients with this complex and potentially life-threatening condition.

Differential Diagnosis

The differential diagnosis of large bowel obstruction is broad and encompasses both mechanical and functional disorders that impair normal colonic transit. Distinguishing true mechanical obstruction from other conditions that mimic its clinical and radiologic manifestations is essential for guiding appropriate management and preventing unnecessary or delayed intervention. Several intrinsic colonic pathologies may present similarly to large bowel obstruction. Diverticulitis, particularly when complicated by phlegmon, abscess, or stricture formation, can produce segmental narrowing and proximal distension that simulate obstructive physiology. Colorectal malignancy is a leading consideration, as neoplastic lesions often cause progressive luminal narrowing and may ultimately culminate in complete obstruction. Inflammatory bowel disease, including Crohn disease and ulcerative colitis, may result in stricturing disease, toxic megacolon, or localized edema, all of which can alter transit and cause distension. Ischemic colitis, with mural edema and segmental hypoperfusion, may also produce pain, tenderness, and radiographic abnormalities that can be confused with obstruction. Beyond primary colonic disease, processes involving the small bowel and peritoneal cavity must be considered. Small bowel obstruction, whether due to adhesions, hernias, malignancy, or strictures, may present with abdominal distension, vomiting, and reduced bowel output but typically demonstrates different radiologic patterns. Abdominal and pelvic hernias, including inguinal, femoral, spigelian, and diaphragmatic hernias, can cause either small or large bowel entrapment and obstruction and should be actively sought on physical examination and imaging. Carcinomatosis, with diffuse peritoneal seeding, may result in multifocal bowel tethering, impaired motility, and partial or complete obstruction at multiple levels. Intra-abdominal or pelvic abscesses, whether postoperative or inflammatory in origin, may externally compress the colon and produce similar symptoms [31].

Functional disorders are also key elements of the differential diagnosis. Ileus, often postoperative or secondary to systemic illness, metabolic derangement, or medications, leads to diffuse bowel dilatation without a discrete transition point. Acute colonic pseudo-obstruction (Ogilvie syndrome) mimics mechanical large bowel

obstruction clinically and radiographically but arises from autonomic dysregulation rather than a physical blockage. Toxic megacolon represents a fulminant form of colitis characterized by systemic toxicity, colonic dilatation, and mural thickening, and must be differentiated from obstruction because management emphasizes emergent medical therapy and careful decompression rather than immediate resection. Additional entities to consider include appendicitis, particularly when associated with a pelvic abscess; pelvic inflammatory disease causing localized peritonitis; mesenteric ischemia; colonic intussusception, often secondary to a mass or polyp as a lead point; volvulus of the sigmoid, cecum, or less commonly transverse colon; foreign body obstruction; infection-related colitis; radiation-induced strictures; and rare anatomic variants that alter colonic configuration or fixation. A comprehensive clinical assessment, integrated with laboratory data and high-quality imaging, is therefore required to distinguish among these possibilities and to identify those patients who require urgent surgical or endoscopic intervention [32].

Pertinent Studies and Ongoing Trials

Recent clinical investigations have substantially refined the understanding of optimal management strategies for malignant large bowel obstruction, particularly with regard to the role of endoscopic stenting as a bridge to surgery. The Colorectal Endoscopic Stenting Trial (CREST), published in 2022, provided robust prospective evidence in this domain. In this multicenter study, stenting for left-sided colonic malignancy successfully relieved obstruction in 82% of treated patients and was associated with a significant reduction in the need for emergent stoma formation. Importantly, these short-term technical and clinical benefits did not come at the cost of compromised oncologic outcomes: no statistically significant differences were observed in either 30-day mortality or three-year recurrence rates when compared with emergency surgery, thereby supporting the oncologic safety of stenting as a temporizing strategy in appropriately selected patients [44]. Parallel work has extended the evaluation of stenting to right-sided colon cancers, a setting in which data have historically been more limited. In 2022, Kanaka et al. examined perioperative outcomes associated with the use of stents as a bridge to surgery compared with immediate emergency resection in patients with right-sided obstructing lesions. Their analysis demonstrated that preoperative stenting was associated with lower postoperative complication rates and reduced mortality relative to emergency surgery, underscoring the potential benefit of decompression and clinical optimization before definitive resection, even for proximal colonic malignancies [45].

Beyond procedural strategies, emerging evidence has also focused on biological correlates of obstruction. A large retrospective study from China evaluated 1474 individuals who underwent surgery for colonic obstruction and sought to identify diagnostic and prognostic biomarkers associated with this presentation. The investigators reported significant positive correlations between obstruction and several serum markers, including carcinoembryonic antigen, carbohydrate antigen 19-9 (CA 19-9), and carbohydrate antigen 125 (CA-125), as well as hematologic parameters such as neutrophil and lymphocyte counts. Additionally, elevated levels of hepatic and biliary enzymes, specifically alkaline phosphatase and gamma-glutamyl transpeptidase, were associated with obstructive disease. These findings suggest that combined biochemical and cellular profiles may offer adjunctive value in risk stratification, early recognition of advanced disease, and potentially in prognostication for patients presenting with colonic obstruction [46]. The timing of definitive surgery after bridge-to-surgery interventions has also been the subject of recent inquiry. A 2021 Dutch study investigated the relationship between the interval from temporizing treatment to elective resection and long-term survival in patients with obstructed left-sided colon cancer. The authors compared outcomes in patients undergoing operation within fewer than four weeks versus those whose surgery occurred at or beyond the four-week mark. Among the 94 patients included, 38 underwent earlier surgery and 56 had a delayed procedure. Interestingly, prolonged time to elective resection was associated with improved overall survival, suggesting that a period of clinical optimization, more complete staging, and careful surgical planning may confer a meaningful prognostic advantage in selected patients undergoing bridge-to-surgery management [47].

The influence of time-to-intervention on immediate outcomes has been further explored in a broader large bowel obstruction cohort by Kwaan et al. In this study, the authors examined patients admitted with obstruction who underwent a procedural intervention—colectomy, stoma formation, or stenting—within two days of hospitalization. Their analysis demonstrated that early intervention was associated with shorter hospital length of stay, reflecting improved efficiency and faster resolution of the acute obstructive episode. However, this expedited management did not translate into a measurable reduction in overall mortality within the study population. These results emphasize that while prompt procedural relief of obstruction can enhance short-term recovery and resource utilization, mortality in large bowel obstruction is likely determined by a complex interplay of factors including patient comorbidities, disease stage, presence of sepsis or perforation, and

underlying malignancy biology [18]. Collectively, these contemporary studies underscore the evolving nature of evidence regarding timing, technique, and adjunctive biomarkers in the management of large bowel obstruction and highlight the need for individualized, data-informed therapeutic strategies.

Prognosis

The prognosis of patients with large bowel obstruction is influenced by a complex interplay of patient-related, disease-related, and treatment-related factors. Recent efforts have focused on developing predictive tools to better estimate short-term risk and guide clinical decision-making. In 2023, Eugene et al. proposed a predictive model for 30-day mortality following surgery for acute abdomen, including cases of colonic obstruction, which incorporates 13 preoperative variables. These parameters encompass demographic characteristics such as age, hemodynamic indices including blood pressure and heart rate, elements of respiratory history, selected biochemical markers, and clinical impressions regarding the likelihood of malignancy and intraoperative contamination. The model also integrates American Society of Anesthesiologists (ASA) physical status classification and the specific indication for surgery. By quantifying perioperative risk using readily available clinical data, this tool aims to support more informed discussions with patients and families, guide perioperative optimization, and ultimately reduce morbidity and mortality in this high-risk population [48]. Despite advances in supportive care, anesthesia, and surgical techniques, acute malignant large bowel obstruction continues to be associated with adverse long-term outcomes. Emergency intervention for obstructing colorectal cancer is consistently linked with poorer survival compared to elective management of non-obstructed malignancies. Obstruction itself is a marker of advanced disease and physiologic compromise. Studies indicate that patients presenting emergently with obstructing colorectal cancer have significantly worse overall survival than those whose cancers are diagnosed and treated electively without obstruction, reflecting both the biologic aggressiveness of tumors that progress to obstruction and the detrimental impact of urgent, high-risk surgery [6]. Reported mortality for emergency surgery in the setting of obstructed colorectal cancer exceeds 11%, underscoring the gravity of such presentations.

Several clinical variables have been identified as predictors of poor outcome. Advanced age, particularly older than 70 years, is consistently associated with increased postoperative complications and mortality, likely due to diminished physiologic reserve, higher comorbidity burden, and reduced capacity to tolerate sepsis or major operative stress. Right-sided obstruction is another adverse prognostic factor, possibly reflecting delayed diagnosis, more extensive disease, or technical

complexity in managing proximal lesions. Significant deviation from ideal body weight, whether underweight or obese, may impair wound healing, immune function, and cardiopulmonary reserve. The presence of sepsis at presentation, including systemic inflammatory response to perforation or ischemic bowel, strongly correlates with both short- and long-term mortality. Elevated creatinine reflects renal dysfunction, which may be acute due to hypoperfusion or chronic due to underlying kidney disease, and is similarly associated with a worse prognosis [5]. Comorbid chronic diseases further exacerbate risk. Conditions such as chronic obstructive pulmonary disease and diabetes mellitus have been associated with increased perioperative complications, including respiratory failure, infections, and impaired wound healing, all of which contribute to poorer overall outcomes [5]. These comorbidities often limit the ability to perform extensive resections or complex reconstructions and may necessitate more conservative or staged approaches, which can affect both survival and quality of life. Interestingly, data from a large cohort of 30,000 patients admitted with large bowel obstruction demonstrated that individuals with benign causes of obstruction experienced the highest inpatient mortality [18]. This somewhat counterintuitive finding may reflect several factors: delays in recognizing the severity of benign conditions such as ischemic colitis, volvulus, or pseudo-obstruction; the advanced age and frailty often seen in these populations; and the presence of multiple comorbidities that predispose to decompensation. Additionally, benign pathologies may be underappreciated diagnostically, leading to delayed definitive intervention and higher rates of ischemia or perforation by the time treatment is instituted. Overall, prognosis in large bowel obstruction is highly variable and depends on timely diagnosis, optimization before intervention, the feasibility of less invasive decompressive measures, and careful perioperative management of comorbid conditions. Tools such as the Eugene et al. mortality prediction model [48], combined with individualized risk assessment, may enhance clinical decision-making and support tailored treatment strategies aimed at improving both short-term survival and long-term functional outcomes.

Complications

Large bowel obstruction is associated with a broad spectrum of complications that may arise from the underlying obstructive pathology, the physiological consequences of prolonged distension, or the interventions used to relieve the obstruction. The obstructed colon is particularly vulnerable to progressive luminal dilation, leading to increased wall tension, impaired perfusion, and ultimately ischemia and necrosis. If unrelieved, this pathophysiologic sequence culminates in perforation, which may occur spontaneously due to excessive

intraluminal pressure or secondary to instrumentation during diagnostic or therapeutic procedures [35]. Bleeding may result from mucosal ulceration, tumor friability, or iatrogenic trauma, and fistula formation can occur when inflamed or neoplastic bowel adheres to adjacent viscera, creating abnormal communications that further complicate management. Endoscopic or fluoroscopic stent placement, while effective in decompressing malignant obstruction and enabling bridge-to-surgery strategies, carries a recognized risk of perforation. The American Society of Colon and Rectal Surgeons estimates that perforation related to stent placement occurs in approximately 2% to 9% of cases, a range that reflects differences in patient selection, stent type, and operator experience [33]. In addition to overt perforations, micro-perforations may develop, which can be radiographically occult yet clinically significant. These small breaches in the bowel wall raise particular concern in the oncologic setting, as they may facilitate peritoneal seeding and dissemination of malignant cells [33]. Surgical management of large bowel obstruction also carries substantial risk. Emergency laparotomy, especially in hemodynamically unstable or septic patients, is associated with high rates of postoperative complications, including surgical site infection, pneumonia, and anastomotic leak. Surgical site infections are especially common following emergent colectomy in the context of obstruction, where compromised tissue perfusion, contamination, and physiological stress converge to impair healing [5]. When a colostomy is created—either as a definitive procedure or as part of a staged reconstruction—subsequent colostomy reversal is not benign. Anastomotic leaks after reversal are clinically significant and have been associated with a reported mortality of 8.3%, underscoring the need for careful patient selection and perioperative optimization [5][49]. Collectively, these complications highlight the importance of judicious procedural planning, meticulous technique, and vigilant postoperative monitoring in patients with large bowel obstruction.

Consultations

The complexity of large bowel obstruction, particularly in the context of malignancy, mandates early and sustained involvement of multiple specialties to achieve optimal patient outcomes. Gastroenterologists often serve a central role in the diagnostic and therapeutic endoscopic management of obstruction. They perform colonoscopy or flexible sigmoidoscopy to establish the diagnosis, obtain biopsies for histopathologic confirmation, and, where appropriate, deploy self-expanding metal stents or perform decompressive procedures. Their expertise is especially critical in bridge-to-surgery strategies and in palliative decompression for patients with unresectable disease. Interventional radiologists contribute key image-guided procedures that can

substantially alter the clinical course. These include percutaneous drainage of intra-abdominal or pelvic abscesses, which facilitates source control in contaminated fields and may avert or delay the need for extensive surgery in unstable patients. Radiologists also interpret cross-sectional imaging that delineates the level and cause of obstruction, identifies ischemia or perforation, and informs operative planning. Close collaboration between radiologists and surgeons ensures that imaging findings are rapidly translated into targeted therapeutic action. Medical and surgical oncologists are integral to the comprehensive care of patients with malignant large bowel obstruction. Medical oncologists guide systemic therapy, including neoadjuvant or adjuvant chemotherapy and, when indicated, targeted biologic agents. Their input is crucial in determining whether a patient should proceed directly to surgery, receive preoperative chemotherapy after decompression, or be managed palliatively. Surgical oncologists and colorectal surgeons design and perform the operative intervention, choosing among resection, diversion, bypass, or palliative stoma formation based on disease extent, patient physiology, and long-term oncologic goals. Colorectal surgeons, in particular, bring specialized expertise in complex resections, anastomotic techniques, and minimally invasive approaches such as laparoscopy or robotic-assisted procedures. In patients with recurrent disease, multiple prior surgeries, or pelvic involvement, their experience in complex reoperative and pelvic surgery is often critical. Ultimately, optimal management of large bowel obstruction requires ongoing communication and shared decision-making among these specialists, ensuring that diagnostic findings, operative risks, oncologic considerations, and patient preferences are all integrated into a cohesive treatment plan [48][49].

Patient Education

Deterrence of large bowel obstruction, particularly when secondary to colorectal carcinoma, is closely linked to public health efforts in cancer prevention, early detection, and patient education. In recent years, a concerning epidemiologic trend has been documented: a rising incidence of colorectal cancer in individuals younger than 50 years, a population that historically fell outside routine screening algorithms [50]. This shift has profound implications for both clinicians and patients, as younger individuals are more likely to present with advanced or obstructive disease due to delayed diagnosis and lower suspicion of malignancy. Clinicians should proactively discuss this evolving trend with patients, emphasizing that colorectal cancer is no longer a disease confined to older age groups. Education should include recognition of alarm symptoms—such as unexplained changes in bowel habits, rectal bleeding, iron deficiency anemia,

unintentional weight loss, and persistent abdominal pain—that warrant prompt evaluation regardless of age. Patients should be informed that obstruction can be a late and potentially preventable manifestation of colorectal malignancy and that early evaluation of concerning symptoms can reduce the likelihood of emergent presentations. Screening recommendations must be communicated clearly and tailored to individual risk profiles. For average-risk individuals, multiple professional societies have already lowered the recommended age to begin routine colorectal cancer screening, in many settings to 45 years, with earlier and more intensive surveillance for those with a family history, genetic syndromes, or inflammatory bowel disease. Clinicians should discuss the range of available screening modalities, including colonoscopy, fecal immunochemical testing, stool DNA tests, CT colonography, and, in selected cases, capsule colonoscopy, highlighting the advantages and limitations of each. Particular emphasis should be placed on colonoscopy as both a diagnostic and therapeutic tool that permits detection and removal of precancerous polyps, thereby interrupting the adenoma–carcinoma sequence and reducing the risk of future obstruction. Patient education should also extend to lifestyle modifications that may decrease colorectal cancer risk, such as smoking cessation, maintenance of a healthy body weight, regular physical activity, and dietary patterns rich in fiber and low in processed meats. For patients with known colorectal cancer or prior obstruction, counseling should include discussion of recurrence risk, the importance of surveillance colonoscopy, adherence to oncologic follow-up, and early reporting of new or recurrent symptoms. By fostering informed patient engagement and adherence to preventive strategies, clinicians can contribute meaningfully to reducing the incidence of advanced, obstructing colorectal disease [50].

Other Issues

Several key practical considerations, or “clinical pearls,” can significantly influence outcomes in the management of large bowel obstruction. In centers equipped with appropriate expertise and technology, the availability of interventional gastroenterology and radiology enables the placement of colonic stents under direct endoscopic and fluoroscopic guidance. These self-expanding metal stents can effectively decompress the obstructed segment, thereby stabilizing the patient, allowing for aggressive medical optimization, and transforming an emergent high-risk operation into a semi-elective or elective procedure with lower morbidity. Such an approach can reduce the need for emergency stoma formation and permit one-stage resection with primary anastomosis in many patients with malignant obstruction. In facilities lacking advanced endoscopic or interventional capacity, decompression strategies may be more limited. Rectal tubes or nasogastric suction can offer partial

relief of proximal distension, especially when the ileocecal valve is incompetent, but these measures rarely provide definitive treatment. Consequently, patients in these settings often proceed directly to stoma creation or segmental resection as emergent interventions. Regardless of the available techniques, all patients with large bowel obstruction should be monitored closely for clinical deterioration. Serial abdominal examinations, trending of vital signs, and repeat imaging are indispensable for detecting early signs of ischemia or perforation. A crucial concept is that the duration of distension is more strongly associated with the risk of perforation than any single measurement of colonic diameter. While cecal diameters above certain thresholds (commonly cited as 10 to 12 cm) raise concern, prolonged distension at lesser diameters may also compromise perfusion and precipitate necrosis. Thus, failure to recognize and address persistent or progressive distension can have grave consequences [18]. Clinicians must maintain a high index of suspicion for perforation, particularly in patients who develop sudden worsening of pain, peritoneal signs, fever, tachycardia, or hemodynamic instability. Importantly, occult perforations can be missed on plain radiography or ultrasound, making cross-sectional imaging, such as CT, a more sensitive modality for detecting small amounts of free air, pneumatosis, or subtle extraluminal gas [1].

The overall morbidity and mortality associated with large bowel obstruction are determined by the underlying etiology, the presence of comorbidities, and the timeliness and appropriateness of intervention. Early diagnosis and prompt decompression, when feasible, are generally associated with improved outcomes, whereas delayed treatment increases the likelihood of ischemia, perforation, and sepsis. Mortality is significantly higher in the context of perforation or transmural necrosis, with reported mortality rates ranging from 15% to 30% in patients who experience perforation during an episode of large bowel obstruction [17]. Self-expandable metallic stents have improved early outcomes for many patients with malignant obstruction, leading to rapid symptom relief and improved short-term quality of life. However, current data suggest that while stenting favorably affects perioperative morbidity and may enable more definitive surgical strategies, it does not substantially alter long-term survival, which remains largely dictated by tumor stage, biology, and response to systemic therapy [51]. These nuances underscore the importance of integrating immediate mechanical management with comprehensive oncologic care and long-term follow-up.

Enhancing Healthcare Team Outcomes

Optimal care for patients with large bowel obstruction hinges on an interprofessional, team-based approach that leverages the expertise of multiple disciplines and emphasizes clear, continuous communication. Surgeons, particularly colorectal and

general surgeons, often lead the management team, determining the need for operative versus nonoperative intervention and selecting the appropriate surgical strategy when required. Gastroenterologists provide crucial diagnostic and therapeutic endoscopic services, including biopsy, decompressive colonoscopy, and stent placement. Oncologists, both medical and radiation, shape the broader oncologic strategy, including neoadjuvant or adjuvant therapy, palliative regimens, and long-term surveillance plans. Radiologists and interventional radiologists interpret complex imaging, identify subtle signs of ischemia or perforation, and perform image-guided procedures such as abscess drainage and percutaneous decompression. Intensivists contribute expertise in hemodynamic management, ventilatory support, and care of septic or multi-organ-dysfunction patients in the intensive care unit. Nurses and advanced practice providers serve as the backbone of daily patient care. They monitor vital signs, fluid balance, and pain, detect early clinical deterioration, and coordinate the logistics of imaging, procedures, and consultations. Their role in patient and family education is equally critical, as they reinforce information about procedures, stoma care, dietary changes, and warning signs requiring urgent attention. Pharmacists ensure that antimicrobial regimens, analgesics, antiemetics, and other medications are optimized for efficacy and safety, particularly in patients with renal or hepatic dysfunction or complex drug interactions. They also contribute to anticoagulation management and perioperative medication reconciliation. Following surgical intervention, dietitians provide individualized nutritional plans, especially for patients with ileostomies or colostomies who require guidance on fluid and electrolyte intake, fiber modification, and prevention of dehydration or obstruction. Stoma nurses offer specialized education in stoma care, appliance fitting, and skin protection, which is vital for maintaining quality of life and preventing complications. Physical and occupational therapists facilitate early mobilization, functional recovery, and adaptation to any new physical limitations, while respiratory therapists assist with pulmonary hygiene and ventilator weaning in high-risk patients [49].

Patient navigators and case managers help coordinate outpatient follow-up, arrange home health services, and ensure that patients transition smoothly from hospital to home or rehabilitation facilities. This is particularly crucial for individuals with malignancy, who require ongoing oncologic care, surveillance imaging, and support services. Regular multidisciplinary meetings, tumor boards, and care conferences foster alignment of goals, reduce duplication of efforts, and allow dynamic adjustment of management plans as new clinical information emerges. Effective communication—both within the

healthcare team and between clinicians and patients—is central to achieving favorable outcomes. In the operating room and intensive care unit, real-time information exchange among surgeons, anesthesiologists, nurses, and intensivists enables timely responses to sudden hemodynamic changes or intraoperative findings. In the outpatient setting, clear documentation and handoffs ensure continuity across different phases of care. By fostering a collaborative culture, defining roles and responsibilities, and maintaining patient-centered focus, the interprofessional team can significantly enhance safety, improve clinical outcomes, and support holistic recovery for patients experiencing large bowel obstruction [50].

Conclusion:

In conclusion, large bowel obstruction is a time-sensitive condition with significant morbidity and mortality, often serving as the presenting sign of advanced colorectal cancer. Management success hinges on a structured, stepwise approach beginning with aggressive resuscitation to correct dehydration and electrolyte imbalances. Accurate and rapid diagnosis is achieved primarily through computed tomography imaging, which identifies the level, cause, and critical complications like ischemia or perforation. The therapeutic paradigm has evolved significantly, with self-expanding metal stenting established as a safe and effective bridge-to-surgery for malignant left-sided obstructions, reducing emergency stoma formation and facilitating elective, optimized resection. Surgical intervention remains definitive, with the choice of procedure individualized based on patient physiology, tumor location, and the presence of peritonitis. For benign etiologies like volvulus or pseudo-obstruction, specific medical and endoscopic strategies are paramount. Ultimately, optimal outcomes depend on a seamless, multidisciplinary collaboration between emergency physicians, gastroenterologists, radiologists, surgeons, and oncologists. This integrated framework ensures timely decompression, appropriate oncologic management, and comprehensive patient care, thereby improving both short-term survival and long-term quality of life for individuals facing this acute abdominal emergency.

References:

1. Pisano M, Zorcolo L, Merli C, Cimbanassi S, Poiasina E, Ceresoli M, Agresta F, Allievi N, Bellanova G, Coccolini F, Coy C, Fugazzola P, Martinez CA, Montori G, Paolillo C, Penachim TJ, Pereira B, Reis T, Restivo A, Rezende-Neto J, Sartelli M, Valentino M, Abu-Zidan FM, Ashkenazi I, Bala M, Chiara O, De' Angelis N, Deidda S, De Simone B, Di Saverio S, Finotti E, Kenji I, Moore E, Wexner S, Biffi W, Coimbra R, Guttadauro A, Leppäniemi A, Maier R, Magnone S, Mefire AC, Peitzmann A, Sakakushev B, Sugrue M, Viale P, Weber D,

- Kashuk J, Fraga GP, Kluger I, Catena F, Ansaloni L. 2017 WSES guidelines on colon and rectal cancer emergencies: obstruction and perforation. *World journal of emergency surgery* : WJES. 2018;13(0):36. doi: 10.1186/s13017-018-0192-3.
2. Toumi O, Hamida B, Njima M, Bouchrika A, Ammar H, Daldoul A, Zaied S, Ben Jabra S, Gupta R, Noomen F, Zouari K. Adenosquamous carcinoma of the right colon: A case report and review of the literature. *International journal of surgery case reports*. 2018;50(0):119-121. doi: 10.1016/j.ijscr.2018.07.001.
 3. Girão de Caires F, Nunes M, Flores P, Girão de Caires A, Dionísio I. Bowel Obstruction as the Initial Presentation of Urothelial Carcinoma. *Cureus*. 2024 Jul;16(7):e64056. doi: 10.7759/cureus.64056.
 4. Fardanesh A, George J, Hughes D, Stavropoulou-Tatla S, Mathur P. The use of self-expanding metallic stents in the management of benign colonic obstruction: a systematic review and meta-analysis. *Techniques in coloproctology*. 2024 Jul 19;28(1):85. doi: 10.1007/s10151-024-02959-7.
 5. Pavlidis ET, Galanis IN, Pavlidis TE. Management of obstructed colorectal carcinoma in an emergency setting: An update. *World journal of gastrointestinal oncology*. 2024 Mar 15;16(3):598-613. doi: 10.4251/wjgo.v16.i3.598.
 6. Kato H, Kawai K, Nakano D, Dejima A, Ise I, Natsume S, Takao M, Shibata S, Iizuka T, Akimoto T, Tsukada Y, Ito M. Does Colorectal Stenting as a Bridge to Surgery for Obstructive Colorectal Cancer Increase Perineural Invasion? *Journal of the anus, rectum and colon*. 2024;8(3):195-203. doi: 10.23922/jarc.2023-057.
 7. Flores M, Moughnyeh MM, Lekanides A, Parker L. Acute Constipation and A Stercoral Perforation: A Case Report. *SAGE open medical case reports*. 2024;12(0):2050313X241263756. doi: 10.1177/2050313X241263756.
 8. Johnson WR, Hawkins AT. Large Bowel Obstruction. *Clinics in colon and rectal surgery*. 2021 Jul;34(4):233-241. doi: 10.1055/s-0041-1729927.
 9. Quinn K, Davis ME, Carter L, Shortell CK, Sommer C. Emergency General Surgery-A Misnomer? *The American surgeon*. 2018 Jul 1;84(7):1214-1216
 10. De Monti M, Cestaro G, Alkayyali S, Galafassi J, Fasolini F. Gallstone ileus: A possible cause of bowel obstruction in the elderly population. *International journal of surgery case reports*. 2018;43(0):18-20. doi: 10.1016/j.ijscr.2018.01.010.
 11. Fenaroli P, Maritati F, Vaglio A. Into Clinical Practice: Diagnosis and Therapy of Retroperitoneal Fibrosis. *Current rheumatology reports*. 2021 Feb 10;23(3):18. doi: 10.1007/s11926-020-00966-9.
 12. Singh A, Paruthy SB, Kuraria V, Aradhya PS. Unusual Triggers of Acute Intestinal Obstruction in Surgical Emergencies: A Series of Five Cases. *Cureus*. 2024 May;16(5):e60848. doi: 10.7759/cureus.60848.
 13. Burgos-Torres MDM, Molina-Lopez VH, Perez Cruz NM, Perez Del Valle C, Sorrentino J. Multivitamin-Induced Pharmacobezoar: A Rare Entity of Large Bowel Obstruction. *Cureus*. 2023 Jul;15(7):e41688. doi: 10.7759/cureus.41688.
 14. Underhill J, Munding E, Hayden D. Acute Colonic Pseudo-obstruction and Volvulus: Pathophysiology, Evaluation, and Treatment. *Clinics in colon and rectal surgery*. 2021 Jul;34(4):242-250. doi: 10.1055/s-0041-1727195.
 15. Drożdż W, Budzyński P. Change in mechanical bowel obstruction demographic and etiological patterns during the past century: observations from one health care institution. *Archives of surgery (Chicago, Ill. : 1960)*. 2012 Feb;147(2):175-80. doi: 10.1001/archsurg.2011.970.
 16. Shah D, Makharia GK, Ghoshal UC, Varma S, Ahuja V, Hutfless S. Burden of gastrointestinal and liver diseases in India, 1990-2016. *Indian journal of gastroenterology : official journal of the Indian Society of Gastroenterology*. 2018 Sep;37(5):439-445. doi: 10.1007/s12664-018-0892-3.
 17. Doshi R, Desai J, Shah Y, Decter D, Doshi S. Incidence, features, in-hospital outcomes and predictors of in-hospital mortality associated with toxic megacolon hospitalizations in the United States. *Internal and emergency medicine*. 2018 Sep;13(6):881-887. doi: 10.1007/s11739-018-1889-8.
 18. Kwaan MR, Wu Y, Ren Y, Xirasagar S. Prompt intervention in large bowel obstruction management: A Nationwide Inpatient Sample analysis. *American journal of surgery*. 2022 Nov;224(5):1262-1266. doi: 10.1016/j.amjsurg.2022.07.002.
 19. Jaffe T, Thompson WM. Large-Bowel Obstruction in the Adult: Classic Radiographic and CT Findings, Etiology, and Mimics. *Radiology*. 2015 Jun;275(3):651-63. doi: 10.1148/radiol.2015140916.
 20. Naiem MEA, Suliman SH. Cecal perforations due to descending colon obstruction (closed loop): a case report and review of the literature. *Journal of medical case reports*. 2022 Dec 5;16(1):450. doi: 10.1186/s13256-022-03674-3.
 21. Catena F, De Simone B, Coccolini F, Di Saverio S, Sartelli M, Ansaloni L. Bowel obstruction: a narrative review for all physicians. *World journal of emergency surgery* : WJES. 2019;14(0):20. doi: 10.1186/s13017-019-0240-7.

22. Veld JV, Beek KJ, Consten ECJ, Ter Borg F, van Westreenen HL, Bemelman WA, van Hooft JE, Tanis PJ. Definition of large bowel obstruction by primary colorectal cancer: A systematic review. *Colorectal disease : the official journal of the Association of Coloproctology of Great Britain and Ireland*. 2021 Apr;23(4):787-804. doi: 10.1111/codi.15479.
23. Dolejs SC, Guzman MJ, Fajardo AD, Holcomb BK, Robb BW, Waters JA. Contemporary Management of Sigmoid Volvulus. *Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract*. 2018 Aug;22(8):1404-1411. doi: 10.1007/s11605-018-3747-4.
24. Wasanwala H, Neychev V. Perforated Colon Cancer Associated With Post-operative Recurrent Bowel Perforations. *Cureus*. 2021 Sep;13(9):e17655. doi: 10.7759/cureus.17655.
25. Cinar H, Berkesoglu M, Derebey M, Karadeniz E, Yildirim C, Karabulut K, Kesicioglu T, Erzurumlu K. Surgical management of anorectal foreign bodies. *Nigerian journal of clinical practice*. 2018 Jun;21(6):721-725. doi: 10.4103/njcp.njcp_172_17.
26. Orgul G, Soyer T, Yurdakok M, Beksac MS. Evaluation of pre- and postnatally diagnosed gastrointestinal tract obstructions. *The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstetricians*. 2019 Oct;32(19):3215-3220. doi: 10.1080/14767058.2018.1460350.
27. Syrmiss W, Richard R, Jenkins-Marsh S, Chia SC, Good P. Oral water soluble contrast for malignant bowel obstruction. *The Cochrane database of systematic reviews*. 2018 Mar 7;3(3):CD012014. doi: 10.1002/14651858.CD012014.pub2.
28. Hokama A, Iraha A. Coffee bean sign, steel pan sign and whirl sign in sigmoid volvulus. *Revista espanola de enfermedades digestivas*. 2024 Feb;116(2):114-115. doi: 10.17235/reed.2022.9262/2022.
29. Stavride E, Plakias C. Coffee bean sign: Its meaning and importance. *Clinical case reports*. 2020 Oct;8(10):2086-2087. doi: 10.1002/ccr3.3064.
30. Spada C, Hassan C, Bellini D, Burling D, Cappello G, Carretero C, Dekker E, Eliakim R, de Haan M, Kaminski MF, Koulaouzidis A, Laghi A, Lefere P, Mang T, Milluzzo SM, Morrin M, McNamara D, Neri E, Pecere S, Pioche M, Plumb A, Rondonotti E, Spaander MC, Taylor S, Fernandez-Urien I, van Hooft JE, Stoker J, Regge D. Imaging alternatives to colonoscopy: CT colonography and colon capsule. *European Society of Gastrointestinal Endoscopy (ESGE) and European Society of Gastrointestinal and Abdominal Radiology (ESGAR) Guideline - Update 2020*. *European radiology*. 2021 May;31(5):2967-2982. doi: 10.1007/s00330-020-07413-4.
31. Kwaan MR, Ren Y, Wu Y, Xirasagar S. Colonic Stent Use by Indication and Patient Outcomes: A Nationwide Inpatient Sample Study. *The Journal of surgical research*. 2021 Sep;265(0):168-179. doi: 10.1016/j.jss.2021.03.048.
32. van Hooft JE, Veld JV, Arnold D, Beets-Tan RGH, Everett S, Götz M, van Halsema EE, Hill J, Manes G, Meisner S, Rodrigues-Pinto E, Sabbagh C, Vandervoort J, Tanis PJ, Vanbiervliet G, Arezzo A. Self-expandable metal stents for obstructing colonic and extracolonic cancer: European Society of Gastrointestinal Endoscopy (ESGE) Guideline - Update 2020. *Endoscopy*. 2020 May;52(5):389-407. doi: 10.1055/a-1140-3017.
33. Vogel JD, Felder SI, Bhama AR, Hawkins AT, Langenfeld SJ, Shaffer VO, Thorsen AJ, Weiser MR, Chang GJ, Lightner AL, Feingold DL, Paquette IM. The American Society of Colon and Rectal Surgeons Clinical Practice Guidelines for the Management of Colon Cancer. *Diseases of the colon and rectum*. 2022 Feb 1;65(2):148-177. doi: 10.1097/DCR.0000000000002323.
34. Mashar M, Mashar R, Hajibandeh S. Uncovered versus covered stent in management of large bowel obstruction due to colorectal malignancy: a systematic review and meta-analysis. *International journal of colorectal disease*. 2019 May;34(5):773-785. doi: 10.1007/s00384-019-03277-3.
35. Gordon SR, Eichenwald LS, Systrom HK. Endoscopic techniques for management of large colorectal polyps, strictures and leaks. *Surgery open science*. 2024 Aug;20(0):156-168. doi: 10.1016/j.sopen.2024.06.012.
36. Sasaki T, Yoshida S, Isayama H, Narita A, Yamada T, Enomoto T, Sumida Y, Kyo R, Kuwai T, Tomita M, Moroi R, Shimada M, Hirata N, Saida Y. Short-Term Outcomes of Colorectal Stenting Using a Low Axial Force Self-Expandable Metal Stent for Malignant Colorectal Obstruction: A Japanese Multicenter Prospective Study. *Journal of clinical medicine*. 2021 Oct 26;10(21):. doi: 10.3390/jcm10214936.
37. Balciscueta I, Balciscueta Z, Uribe N, García-Granero E. Perineural invasion is increased in patients receiving colonic stenting as a bridge to surgery: a systematic review and meta-analysis. *Techniques in coloproctology*. 2021 Feb;25(2):167-176. doi: 10.1007/s10151-020-02350-2.
38. Gavrilidis P, de'Angelis N, Wheeler J, Askari A, Di Saverio S, Davies JR. Diversion, resection, or stenting as a bridge to surgery for acute

- neoplastic left-sided colonic obstruction: a systematic review and network meta-analysis of studies with curative intent. *Annals of the Royal College of Surgeons of England*. 2021 Apr;103(4):235-244. doi: 10.1308/rcsann.2020.7137.
39. Zwanenburg ES, Veld JV, Amelung FJ, Borstlap WAA, Dekker JWT, Hompes R, Tuynman JB, Westerterp M, van Westreenen HL, Bemelman WA, Consten ECJ, Tanis PJ, On behalf of the Dutch Snapshot Research Group. Short- and Long-term Outcomes After Laparoscopic Emergency Resection of Left-Sided Obstructive Colon Cancer: A Nationwide Propensity Score-Matched Analysis. *Diseases of the colon and rectum*. 2023 Jun 1;66(6):774-784. doi: 10.1097/DCR.0000000000002364.
 40. Boeding JRE, Ramphal W, Rijken AM, Crolla RMPH, Verhoef C, Gobardhan PD, Schreinemakers JMJ. A Systematic Review Comparing Emergency Resection and Staged Treatment for Curable Obstructing Right-Sided Colon Cancer. *Annals of surgical oncology*. 2021 Jul;28(7):3545-3555. doi: 10.1245/s10434-020-09124-y.
 41. Kondo A, Okano K, Kumamoto K, Kobara H, Nagahara T, Wato M, Shibatoge M, Minato T, Masaki T, Suzuki Y, Kagawa Gastroenterology Forum. Surgical management and outcomes of obstructive colorectal cancer in elderly patients: A multi-institutional retrospective study. *Surgery*. 2022 Jul;172(1):60-68. doi: 10.1016/j.surg.2021.12.007.
 42. Farkas N, Kaur V, Shanmuganandan A, Black J, Redon C, Frampton AE, West N. A systematic review of gallstone sigmoid ileus management. *Annals of medicine and surgery (2012)*. 2018 Mar;27():32-39. doi: 10.1016/j.amsu.2018.01.004.
 43. Di Saverio S, Birindelli A, Segalini E, Novello M, Larocca A, Ferrara F, Binda GA, Bassi M. "To stent or not to stent?": immediate emergency surgery with laparoscopic radical colectomy with CME and primary anastomosis is feasible for obstructing left colon carcinoma. *Surgical endoscopy*. 2018 Apr;32(4):2151-2155. doi: 10.1007/s00464-017-5763-y.
 44. CReST Collaborative Group. Colorectal Endoscopic Stenting Trial (CReST) for obstructing left-sided colorectal cancer: randomized clinical trial. *The British journal of surgery*. 2022 Oct 14;109(11):1073-1080. doi: 10.1093/bjs/znac141.
 45. Kanaka S, Matsuda A, Yamada T, Ohta R, Sonoda H, Shinji S, Takahashi G, Iwai T, Takeda K, Ueda K, Kuriyama S, Miyasaka T, Yoshida H. Colonic stent as a bridge to surgery versus emergency resection for right-sided malignant large bowel obstruction: a meta-analysis. *Surgical endoscopy*. 2022 May;36(5):2760-2770. doi: 10.1007/s00464-022-09071-7.
 46. Cao Y, Ke S, Gu J, Mao F, Yao S, Deng S, Yan L, Wu K, Liu L, Cai K. The Value of Haematological Parameters and Tumour Markers in the Prediction of Intestinal Obstruction in 1474 Chinese Colorectal Cancer Patients. *Disease markers*. 2020;2020():8860328. doi: 10.1155/2020/8860328.
 47. de Roos MAJ, Hugen N, Hazebroek EJ, Spillenaar Bilgen EJ. Delayed surgical resection of primary left-sided obstructing colon cancer is associated with improved short- and long-term outcomes. *Journal of surgical oncology*. 2021 Dec;124(7):1146-1153. doi: 10.1002/jso.26632.
 48. Eugene N, Kuryba A, Martin P, Oliver CM, Berry M, Moppett IK, Johnston C, Hare S, Lockwood S, Murray D, Walker K, Cromwell DA, NELA Project Team. Development and validation of a prognostic model for death 30 days after adult emergency laparotomy. *Anaesthesia*. 2023 Oct;78(10):1262-1271. doi: 10.1111/anae.16096.
 49. Manceau G, Voron T, Mege D, Bridoux V, Lakkis Z, Venara A, Beyer-Berjot L, Abdalla S, Sielezneff I, Lefèvre JH, Karoui M, AFC (French Surgical Association) Working Group. Prognostic factors and patterns of recurrence after emergency management for obstructing colon cancer: multivariate analysis from a series of 2120 patients. *Langenbeck's archives of surgery*. 2019 Sep;404(6):717-729. doi: 10.1007/s00423-019-01819-5.
 50. Dharwadkar P, Zaki TA, Murphy CC. Colorectal Cancer in Younger Adults. *Hematology/oncology clinics of North America*. 2022 Jun;36(3):449-470. doi: 10.1016/j.hoc.2022.02.005.
 51. Matsuda A, Miyashita M, Matsumoto S, Sakurazawa N, Kawano Y, Yamahatsu K, Sekiguchi K, Yamada M, Hatori T, Yoshida H. Colonic stent-induced mechanical compression may suppress cancer cell proliferation in malignant large bowel obstruction. *Surgical endoscopy*. 2019 Apr;33(4):1290-1297. doi: 10.1007/s00464-018-6411-x.