Large Bowel Obstruction

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Background

- Large bowel obstruction is a surgical emergency and is most often seen in elderly patients.
- The most common cause of large bowel obstruction is colorectal cancer, accounting for 50-70% of presentations.
    - For colorectal cancer, large bowel obstruction is the clinical presentation in 10% of cases.
    - Obstruction from tumors distal to the splenic flexure are most common (75%).
- Benign etiologies for large bowel obstruction include colonic volvulus (predominantly in the sigmoid colon or cecum), diverticular or inflammatory stricture, incarcerated hernia, adhesive disease, fecal impaction, and pseudo-obstruction (Ogilvie syndrome).
- Patient's with large bowel obstruction often have multiple comorbidities, and present with acute electrolyte and acid-base disturbances.
- Untreated, large bowel obstruction can lead to perforation, both proximally, particularly in the setting of a competent ileocecal valve, or locally, at the site of obstruction.

Clinical Presentation

- Symptoms are related to the period over which the obstruction occurred, as well as to whether the obstruction is partial or complete.
- Common symptoms include progressive abdominal distention, bloating, colicky abdominal pain, and obstipation.
- Nausea and emesis can occur with an incompetent ileocecal valve.
- For patients with an indolent colon cancer presenting as a large bowel obstruction, they may endorse weight loss, hematochezia, or changes in their bowel habits and stool caliber.
- Perforation may manifest as signs of systemic illness or peritonitis.

Evaluation/Diagnostics/Imaging

- There are multiple goals in the assessment of a patient with large bowel obstruction:
    - Initially, one must evaluate for hemodynamic instability or peritonitis, which are signs of uncontained perforation requiring emergency surgery.
    - Diagnostic workup should also identify the cause of the obstruction, in particular differentiating between malignant versus benign etiologies, as each disease process has its own treatment options and unique operative decision-making.
    - Pinpointing the anatomy and location of the obstruction is also paramount to pre-operative planning.
- Laboratory evaluation is used to assess for anemia, electrolyte or acid-base disturbances, hypovolemia, or acute kidney injury.

- CEA measurement may also be useful in patients with suspected colorectal cancer.
- Imaging is a key step in diagnosis:
    - Abdominal radiograph may be a useful, quick screening tool to assess for causes such as volvulus, or to evaluate for pneumoperitoneum, pneumatosis, and the degree of colonic distention.
    - The sensitivity and positive predictive value of plain films for large bowel obstruction is enhanced with the addition of a contrast enema.
    - Computed tomography (CT) remains the gold standard imaging for patients with suspected large bowel obstruction, for the following reasons:
        - CT gives information about the anatomic location of obstruction, as well as differentiates between mechanical versus functional obstructions (ie. ileus and/or acute colonic pseudo-obstruction).
        - In the setting of malignancy, CT can provide important information for staging, as well as local tumor burden.
        - CT can also identify suspected areas of perforation.
    - Though CT is the preferred diagnostic modality, it should not delay treatment for patients in shock who require emergency operation.
- Colonoscopy is an important modality in stable patients, allowing for both diagnosis and treatment:
    - Directly looking at the site of obstruction can help differentiate between benign strictures and malignancy.
    - Biopsies should be taken for tissue diagnosis.
    - In patients with incomplete obstruction, endoscopy can provide a full assessment of the colon, looking for proximal lesions/synchronous tumors.
    - Stents may also be deployed, providing either a bridge to surgery or palliation.
    - For patients with volvulus, endoscopy is used to assess the mucosa for ischemia, and can also be therapeutic in the sigmoid colon via detorsion.

Management

- The initial care for patients with large bowel obstruction is supportive: nasogastric decompression for patients with nausea and/or emesis due to an incompetent ileocecal valve, fluid resuscitation for patients with acid-base disturbances and acute kidney injury, and antibiotics as indicated.
- Management options are specific to the differing causes of obstruction.
- Sigmoid volvulus:
    - In patients without signs of perforation or peritonitis, flexible sigmoidoscopy should be used to assess for signs of ischemia and to detorse the colon.
    - If detorsion is successful, a tube should be left to decompress the colon.
    - Even after endoscopic treatment, short- and long-term recurrence of volvulus is high (3-5% and 43-75%, respectively); as such, sigmoid colectomy should be performed prior to discharge.

    - Sigmoid colectomy should be done on an urgent basis if endoscopic detorsion is unsuccessful, and in the setting of severe ischemia or perforation.
- Cecal volvulus:
    - Endoscopic decompression is much less successful for cecal volvulus.
    - Segmental resection is the treatment of choice.
        - Timing of resection is dictated by patient physiology, presence or absence of bowel ischemia and/or perforation, and comorbid conditions.
        - The choice between primary anastomosis versus ileostomy is based on the patient's hemodynamic status at the time of surgery, as well as the degree of any bowel ischemia and abdominal contamination.
    - Cecopexy is an alternative to segmental resection, though performed much less often.
        - Cecopexy results in variable rates of recurrent volvulus, but with decreased rates of post-operative morbidity when compared to segmental resection.
- Right-sided colon cancer:
    - Segmental resection with primary anastomosis is considered the treatment of choice, with rates of anastomotic leak approaching that of elective cases.
    - Ileocolonic bypass, or loop ileostomy, can be done for patients with unresectable or terminal disease.
    - Unlike for left-sided colon cancers, stenting is not a recommended therapy.
- Left-sided colon cancer:
    - There are several treatment options available for left-sided colon cancer
        - Segmental resection with primary anastomosis:
            - The standard operative treatment in patients without proximal perforation that can tolerate a definitive operation.
            - The incidence of anastomotic leak is 2-12%.
            - Lowers overall mortality rate for patients by obviating the need for a staged procedure and its subsequent operative risks; indeed, end colostomies have a low rate of reversal.
        - Hartmann's procedure with end colostomy:
            - An option in the setting of frank perforation with severe contamination, or in patients with multiple comorbidities whose lives would be at risk if they were to suffer an anastomotic leak
        - Segmental resection is also preferred to subtotal colectomy to prevent complications with changing post-operative bowel function.
        - Subtotal colectomy with ileorectal anastomosis may be necessary for patients with synchronous lesions or who have compromised or perforated proximal colon.
    - There have been no consistent advantages demonstrated with on-table lavage prior to anastomosis, and this technique prolongs operative time significantly.
    - Self-expanding metal stents provide a non-operative alternative for stable patients:

        - Stenting can be used as a bridge to surgery, allowing time for resuscitation, staging, colon decompression, pre-operative bowel prep, and operative planning.
        - Complications, such as local perforation, attributable to stent placement is variable, ranging from 10-50% in the literature.
        - Pre-operative stenting is associated with a higher rate of laparoscopic resection and with a lower rate of stoma creation.
        - The oncologic effects of stent placement have not been fully elucidated, and available evidence cautions that stent placement may be associated with worse oncologic outcomes.
        - Of note, patients receiving or who will receive bevacizumab experience a higher rate of stent-related perforation; as such, these patients should not undergo stent placement.
        - Stenting is also a good option for patients whose disease requires palliation, and it is preferred to proximal loop colostomy.
- Rectal cancer:
    - For patients with locally advanced rectal cancer, transverse colostomy should be considered so that proper neoadjuvant chemoradiation can be performed prior to definitive resection.

Suggested Reading

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