

Palliation of gastrointestinal obstruction

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Mrs E.B. is a 54-year-old woman with a 1-year history of ovarian cancer. She was diagnosed with abdominopelvic recurrence 6 months ago, complicated by a rectovaginal fistula and bouts of bowel obstruction. She suffered from fatigue and anorexia, and also had perineal pain due to excoriation from the fecal incontinence via the fistula. Mrs E.B. was admitted to the palliative care unit of a small community hospital where these problems were addressed successfully with a combination of medications in addition to her baseline octreotide. She fared quite well for about a month, then developed vomiting. Over a period of 2 days, vomiting episodes became more frequent, occurring mostly after meals.

Gastrointestinal obstructions are relatively rare in palliative care patients, with an incidence of about 3% to 5%. The expected median survival of patients with malignant bowel obstruction is 1 to 3 months unless chemotherapy is an option, which might prolong survival to 1 to 2 years.^{1,2} These obstructions can occur anywhere along the gastrointestinal tract, from the esophagus to the rectum, but are most common in the small bowel. Bowel obstructions are more frequent in patients with colon cancer (4% to 24% of patients) and gynecologic cancers (5% to 42% of patients), although melanoma and lung, breast, gastric, biliary, and pancreatic cancers can also be sources of obstructions.³ Up to 10% to 48% of bowel obstructions in cancer patients are due to benign causes, such as adhesions (after surgery), fibrosis from radiation enteritis or intra-abdominal chemotherapy, volvulus, and intussusception.⁴ Malignant causes are secondary to intraluminal, intramural, or extrinsic tumours causing mechanical occlusion of the bowel lumen. There can also be functional obstructions, in which the mesentery, celiac, or enteric plexus might be infiltrated by tumours, causing the peristalsis of the bowel to malfunction.⁵ Diabetic neuropathy, constipation, and medications such as opioids and anticholinergic drugs might also contribute to bowel obstruction, whether mechanical or functional, by slowing down intestinal transit or further blocking a stenosed area.

Pathophysiology

The pathophysiology of obstructions involves a vicious cycle of distension due to gas and non-absorbed

secretions, followed by more fluid secretion, causing more distension in the bowel. That is, the bowel mucosa, damaged by the hypertensive state of distension, produces even more secretions via an inflammatory response and release of vasoactive intestinal polypeptide.⁶ This cycle results in bloating, pain, cramping, nausea, and vomiting. The symptoms vary in severity and rapidity of onset, depending on the level of the obstruction.⁶ For instance, in gastric outlet obstruction, there is early and severe nausea and vomiting. In small-bowel obstruction, there is pronounced cramping and nausea with vomiting. In large-bowel obstruction, symptoms appear later in the course of the obstruction, with considerable distension and occasional paradoxical diarrhea owing to bacterial overgrowth. There can be 2 types of pain—a continuous one, from the distension and the tumour itself, and a crampiform one, which can be episodic and which occurs mostly after meals. The vomit might be feculent in large-bowel obstruction, whereas it is biliary in small-bowel and gastric outlet obstructions. In complete obstruction flatus and stool are absent.

Evaluation and management

Bowel obstructions are rarely an emergency, and patients benefit from evaluation of their special circumstances by multidisciplinary teams of physicians. The initial management of patients presenting with bowel obstruction includes an evaluation of their overall status, including the stage of their disease trajectory and their goals of care. Pain, nausea, vomiting, and fluid status need to be addressed at the outset. In many circumstances, this involves intravenous hydration and correction of electrolyte abnormalities, as well as insertion of a nasogastric (NG) tube for decompression and relief of nausea and vomiting, or at a minimum, giving the patient nothing by mouth. Bloodwork might be helpful both for evaluation of hydration and electrolyte status and for prognostication (albumin, liver enzyme, lactate dehydrogenase, and C-reactive protein levels and complete blood count). An abdominal series of radiographs to assess bowel distension and air-fluid levels might help discern whether the patient is obstructed versus constipated, although 75% of plain films are nondiagnostic.⁵ Gastrografin (amidotrizoate), an osmotic contrast medium, can be helpful for radiography of the small bowel, and might have a role in reversing partial obstruction.^{7,8} Barium should not be used. A computed tomography scan is the better radiologic investigation to determine if there is truly an obstruction, and if so, its level, the number of sites of obstruction, and whether the cause is benign or



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malignant.⁹ Explanations of the diagnosis, expected outcome, and different treatment options available, including the usual complications, should be provided to patients and family members, and discussed within the context of their level-of-care preferences.

Treatment

Treatment options depend on the type of obstruction, the urgency of the problem (eg, whether it is complicated by peritonitis), the prognosis, and the preferences of the patient. Even palliative patients can benefit from surgery if they are in good physical condition with only 1 site of obstruction, if there is no resolution of the bowel obstruction after 48 to 72 hours of conservative management (see medical management section below). This is especially true in cases of benign causes of obstruction, as the outcome is much more favourable (see **Boxes 1** and **2** for contraindications and complications of surgery).^{1,3-5,8,10}

If the patient is a poor surgical candidate or refuses surgery, endoscopically placed stents in proximal small- or large-bowel obstructions can palliate the patient's symptoms quite effectively (see **Box 3** for stent contraindications⁶ and **Table 1** for stent complications^{9,11-13}). When the patient's situation is not amenable to surgery or stenting, medical management should be the

mainstay of care, the aim being to relieve symptoms to an acceptable level, and sometimes to reverse a partial occlusion.

Medical management. Medical treatment aims to relieve pain, nausea, and vomiting by looking to the

Box 1. Contraindications for surgery

Absolute contraindications

- Patient refusal
- Functional obstruction
- Ascites requiring frequent paracentesis
- Obstruction at multiple sites

Relative contraindications

- Poor performance status
- Patient > 65 y old with cachexia
- Albumin level < 25 g/L
- Metastatic cancer with poor symptom control
- Palpable abdominal masses or diffuse carcinomatosis
- Preoperative weight loss > 9 kg
- Previous radiotherapy to abdomen or pelvis
- Extensive previous chemotherapy or radiotherapy

Data from Kolomainen and Barton,¹ Soriano and Davis,⁵ and Roeland and von Gunten.⁸

pathophysiology of these symptoms (Table 2).^{3-5,7,14} Pain caused by tumours is addressed most appropriately by strong opioids given subcutaneously (SQ) or transdermally to ensure proper absorption that the oral route cannot provide. Crampiform pain, if present, can be treated with anticholinergic drugs such as hyoscine butylbromide administered SQ or

scopolamine administered SQ or by transdermal patch, and avoidance of prokinetic medications such as metoclopramide. Nausea is relieved with regular administration of antiemetic drugs, haloperidol being the most commonly used medication. Nausea might also respond to parenteral hydration of greater than 500 mL over 24 hours either intravenously or SQ, but

Box 2. Complications* of surgery	
Wound infection	
Wound or anastomosis dehiscence	
Peritoneal abscess	
Sepsis	
Enterocutaneous fistula	
Gastrointestinal bleeding	
Ileus	
Reobstruction	
Atrial fibrillation or myocardial infarction	
Pneumonia	
Deep vein thrombosis or pulmonary embolus	
*Mortality frequency was reported to be from 12% to 40%. ⁴ Frequency of complications was reported to be from 45% to 50% ¹⁰ and from 9% to 90%. ³ Data from Hanks et al, ³ Downing and Wainwright, ⁴ and Foo et al. ¹⁰	

Table 1. Stent complications	
COMPLICATION	FREQUENCY, %
Tumour ingrowth	2
Fistula (rectovesical)	0.8
Bowel perforation (from guide wire, pressure necrosis, balloon dilation, chemotaxis assay)	3.76-5.6
Biliary obstruction	50
Stent migration (post-chemotaxis assay)	3-14
Stent dysfunction (failure to cross stricture, failure to open)	3.8
Bleeding	< 5
Recurrent obstruction	10
Mortality	0-4 ^{9,13}
Data from Mosler et al ¹¹ and Ronnekleiv-Kelly and Kennedy. ¹²	

Table 2. Medications for treatment of obstruction		
CATEGORY	MEDICATION	DOSAGE
Analgesic drugs	Opioids (SQ or transdermal)	As needed to control symptoms
	Steroids (eg, dexamethasone)	See below
	Antispasmodic-anticholinergics	See below
Antisecretory agents	Dexamethasone	6-20 mg/d SQ trial for 3-5 d
	Octreotide	100-1500 µg/d SQ
	Antispasmodic-anticholinergics	
	• Hyoscine butylbromide	40-120 mg/d SQ
	• Glycopyrrolate	0.1-0.4 mg/d SQ
	• Scopolamine	0.2-2 mg/d SQ or 1-2 transdermal patches of 1.5 mg every 3 d
	H ₂ -receptor antagonists (eg, famotidine, ranitidine)	As needed to control symptoms
	Proton pump inhibitors	As needed to control symptoms
Antiemetic drugs	Metoclopramide (if no colicky pain)	40-240 mg/d SQ
	Haloperidol	5-15 mg/d SQ
	Olanzapine	2.5-20 mg/d SL
	Phenothiazines (sedation)	
	• Chlorpromazine	50-100 mg rectally or IM every 8 h
	• Prochlorperazine	25 mg rectally every 8 h
	• Methotrimeprazine	6.25-50 mg/d SQ
	Dimenhydrinate	50-100 mg/d SQ, IV, or rectally
	Ondansetron	4-8 mg twice daily IV
Other	Laxative suppositories, enemas	As needed to control symptoms
	Amidotrizoate ⁷	A single 50-mL oral dose with metoclopramide, octreotide, dexamethasone SQ in partial obstruction

IM—intramuscularly, IV—intravenously, SL—sublingually, SQ—subcutaneously.
Data from Hanks et al,³ Downing and Wainwright,⁴ Soriano and Davis,⁵ and Glare et al.¹⁴

Box 3. Stent contraindications

Poor performance status
Poor prognosis (<30 d)
Perforation with peritonitis
Stenosis of the lower one-third of the rectum (can cause tenesmus, incontinence, and risk of stent migration)
Multiple sites of stenosis
Peritoneal carcinomatosis

Data from Ripamonti et al.⁶

this must be done with caution so as not to increase third spacing and abdominal distension.⁵ Thirst is best addressed with good mouth care.¹⁵ Antisecretory medications such as octreotide and dexamethasone (via its anti-inflammatory effect) will also help with nausea and vomiting.

Octreotide is a somatostatin analogue that inhibits vasoactive intestinal polypeptide activity in the gut, thereby reducing gastric and pancreatic juices and water and electrolyte excretion in the lumen.^{3,16} It also reduces splanchnic blood flow, indirectly decreasing gut wall edema, peristalsis (and secondary abdominal

cramping), and bile excretion. Octreotide has been shown to improve bowel obstruction symptoms, sometimes eliminating the need for surgery, or improving the outcome of surgery by minimizing gut wall damage such as necrosis. Palliative patients might even have reversal of the subocclusive process.^{7,16,17}

Dexamethasone is not used systematically; however, it has added value as an anti-inflammatory by decreasing gut wall edema, thereby relieving some of the stenosis and decreasing the excretion of water into the lumen.^{7,18} Both of these actions can affect pain levels. It also has a central antiemetic effect.

Functional and partial obstructions require similar regimens of opioids, antiemetic drugs, and steroids, in addition to metoclopramide, a prokinetic of the stomach and small bowel. However, metoclopramide should be stopped immediately if it causes increased vomiting or abdominal cramping.

In my experience, when divided doses of the various medications used for relieving bowel obstruction do not appear helpful, a continuous infusion of these same medications might be more effective. There are compatibility charts of medications that can help determine which drugs can safely be added to the mix.³

If maximal medical treatment fails to relieve the obstructive symptoms, a percutaneous gastrostomy tube can be considered (**Boxes 4 and 5**).^{3,5,8,19} This will avoid the need for prolonged use of an NG tube, decompress the bowels, and provide relief from nausea and vomiting. Patients can even enjoy eating and drinking, releasing the gastric bolus via the percutaneous gastrostomy tube afterward. Palliative sedation is a last option for patients with intractable symptoms who have advanced disease and are in the last days of life.

Box 4. Percutaneous gastrostomy contraindications

Absolute contraindications

- Portal hypertension
- Massive ascites
- Predisposition to bleeding
- Active gastric ulceration

Relative contraindications

- Multiple previous upper abdominal surgeries
- Colostomy
- Infected abdominal wounds

Data from Hanks et al,³ Soriano and Davis,⁵ and Roeland and von Gunten.⁸

Box 5. Complications* of percutaneous gastrostomy

- Bleeding in peristoma or in gastric wall; or retroperitoneal or gastric erosion or ulceration
- Perforation or peritonitis
- Fistula
- Migration of catheter (can cause gastric outlet obstruction, pancreatitis, or cholangitis)
- Obstruction or kinking of catheter
- Leakage of gastric content onto skin

*The frequency of complications has been reported to be from 1% to 17%. Data from Soriano and Davis,⁵ and Mori et al.¹⁹

Mrs E.B.'s overall condition was reexamined on the palliative care unit. She was mostly bed bound, and new abdominal masses were now palpable throughout her lower abdomen. An x-ray scan of her abdomen demonstrated air-fluid levels but no bowel distension, a sign that she might have had multiple levels of obstruction. A conservative treatment plan was deemed the best option. Her octreotide dosage was increased to 150 µg 4 times per day from her previous dosage of 100 µg 3 times per day. Dexamethasone was initiated at a dosage of 8 mg twice a day, as was metoclopramide at gradually increasing doses. All oral medications were held temporarily. She did not require an NG tube. The nausea and vomiting stopped the next day. She was able to

resume a liquid diet, then graduated to a regular diet. She lived another month quite comfortably, without reocclusion. ✪

BOTTOM LINE

- Patients with bowel obstructions require evaluations of their disease trajectory and goals of care in deciding how aggressively to address their symptoms.
- Pain, nausea, and vomiting can be addressed by medications given parentally, sublingually, or transdermally.
- Patients (and their families) can be made comfortable through the use of medications and good psychosocial support.

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Competing interests
None declared

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