

CHAPTER 13 EMERGENCY SURGERY

In population-based studies, about 30% of people with colon cancer and 10% of people with rectal cancers present as emergencies. Most of these (80%) have obstruction and most of the others (15%) have perforation.^{1,2} Massive bleeding from Colorectal Cancer is an uncommon presentation.³

A clinical diagnosis of bowel obstruction is confirmed by a plain abdominal radiograph, and a limited gastrografen enema or endoscopy is performed to exclude pseudo-obstruction.⁴ CT scanning may be performed as an alternative or adjunct to contrast enemas.⁵

Most perforations occur at the site of the cancer. A less common presentation is a perforated caecum due to an obstructing cancer of the left colon.⁶ Perforation leads to either a localised abscess or generalised peritonitis.

13.1 Investigations for emergency presentations

13.1.1 Erect chest x-ray

This helps assess any concomitant cardiorespiratory disease and lung metastases, and demonstrates the presence of free subdiaphragmatic gas, which would indicate intraperitoneal perforation. An abdominal decubitus film should be performed for this latter purpose if it is not possible to obtain an erect chest x-ray.

13.1.2 Abdominal x-ray

Supine and erect plain radiographs of the abdomen will usually show typical features of large bowel obstruction. Right-sided colonic obstruction may present appearances similar to a distal small bowel obstruction. True mechanical obstruction may be impossible to distinguish from pseudo-obstruction.⁷ The degree of caecal distension depends on the competence or otherwise of the ileocaecal valve, and should be determined on plain abdominal radiograph.

A clinical diagnosis of large bowel obstruction should be confirmed by a plain radiograph of abdomen and a limited gastrografen enema with and/or endoscopy.⁷

13.1.3 Contrast enema

For patients with a suspected large bowel obstruction, the examination is undertaken without bowel preparation using dilute barium or gastrografen. This helps determine the presence and level of mechanical large bowel obstruction.⁷ If there is any clinical suspicion of perforation, a water-soluble contrast (gastrografen or others) should be employed.

13.1.4 Sigmoidoscopy

In patients with a distal large bowel obstruction, a sigmoidoscope may be used to visualise the obstructing lesion. This is of greater value for detecting rectal or rectosigmoid lesions than colonic lesions, and it will help plan the surgery (see Chapter 8).

13.1.5 CT scan of the abdomen and pelvis

This is useful when there is clinical suspicion of a local perforation and in very elderly and/or immobile patients where a contrast enema cannot be tolerated.⁸ CT can identify the site and cause of obstruction in over 90% of cases, and can also provide extra-colonic information, particularly the presence of liver metastases.^{5,9,10}

A clinical diagnosis of large bowel obstruction should be confirmed by a plain radiograph of abdomen and a limited gastrografen enema with and/or endoscopy.⁶⁻¹⁰ Increasingly, CT scan has gained popularity over contrast enema because of better patient tolerance, and improved sensitivity.

13.2 Timing of surgery

Unless perforation is overt (shown by free gas under the diaphragm) or imminent (shown by a distended or tender caecum), surgery for a large bowel obstruction can be regarded as an urgent rather than an emergency procedure. It is preferable to schedule surgery with a full complement of experienced medical and nursing staff. If there is overwhelming sepsis or, rarely, severe bleeding, urgent surgery is performed after optimisation.

Emergency surgery should be carried out by experienced surgeons and anaesthetists. Less commonly, patients present with imminent or overt perforation and should undergo surgery more urgently after initial stabilisation. In general, patients presenting as emergencies should be optimised before surgery. The need for a stoma should be considered, discussed and sited preoperatively by a stomal therapy nurse or surgeon whenever possible.

13.3 Preparation for surgery

Patients presenting in the emergency department should be prepared carefully for surgery, with adequate fluid and electrolyte resuscitation and monitoring of hydration and urine output. Antibiotic¹¹ and deep vein thrombosis (DVT)^{12,13} prophylaxis are administered; the studies are soundly based on now-classic trial data. (See also Chapter 10.)

Mechanical bowel preparation is generally not used. However, in patients with subacute large bowel obstruction where there is an interval of several days between presentation and surgery, bowel rest and Fleet[®] enema are helpful.

All patients should have a rectal examination and sigmoidoscopy (preferably flexible) to exclude a synchronous rectal lesion. Discussion on and siting of a stoma should be performed preoperatively, wherever possible by a stomal therapy nurse although abdominal distension may make this difficult. (See also Chapter 10.) The support of an intensive care or a high-dependency unit may be needed postoperatively, and occasionally, preoperatively as well. Many patients have other comorbid medical conditions and require careful anaesthetic assessment and medical optimisation.

13.4 Surgery

13.4.1 Bowel obstruction

For right sided cancers, unless there is overwhelming sepsis with generalised peritonitis, or the patient is very frail and sick; a resection and primary ileocolic anastomosis is usually performed.¹⁴

For left-sided obstructing lesions, the cancer is usually resected unless the patient is moribund, as randomised controlled trial data have shown no significant benefit from a staged procedure.^{15,16}

Resection can be performed either as a Hartmann's procedure with an end colostomy, or, in selected circumstances, with resection and anastomosis.¹⁷

With primary anastomosis, the following options are available:

- appropriate resection and a primary anastomosis accompanied by on-table irrigation (which suggested better outcome in a case series),¹⁸ or a modified bowel preparation, (for subacute bowel obstruction), or
- subtotal colectomy with ileorectal anastomosis was shown to be safe in a case series.¹⁹

A subtotal colectomy is preferred in the presence of caecal perforation or in the presence of synchronous neoplasms.²⁰ This approach provided operative mortality rates in a case series that were equivalent to those achieved in elective surgery. In the absence of these functions, a segmental resection with on-table irrigation has been shown in a randomised controlled trial to be associated with better long-term bowel function.²¹

Occasionally, a diverting loop ileostomy is used to protect the anastomosis after a segmental resection.²²

What surgery is recommended for bowel obstruction?

Guideline — Surgery for bowel obstruction	Level of evidence	Practice recommendation	Refs
Primary resection of obstructing carcinoma is recommended unless the patient is moribund.	II	Recommend	14–21

13.4.2 Perforated cancer

The principles of surgery for a perforated cancer follow those for an obstructing cancer. The main points in management are treatment of sepsis and resection of the perforated Colorectal Cancer.⁶ With a left-sided perforated cancer, an anastomosis is best avoided in the presence of generalised peritonitis and significant sepsis. Where the sepsis is more confined, an anastomosis might be performed and consideration should be given to a defunctioning stoma above the anastomosis.

A stoma alone is performed when clinically indicated for moribund patients, or unresectable cancer.

In these circumstances, the siting of the stoma will usually be done by the surgeon.

13.4.3 Colonic bleeding

When a patient presents with massive rectal bleeding, consideration should be given to other more common causes such as diverticular disease or angiodysplasia. The principle of surgery for a bleeding colon cancer is similar to that for an obstructing cancer.

13.4.4 Nonoperative relief of obstruction

Self-expandable metallic stents can be used to relieve left colon obstruction by cancer. This can then allow a mechanical bowel preparation (see Chapter 10), elective resection and anastomosis, or in some cases with advanced metastatic disease or major co-morbidities, it may constitute definitive treatment. Special units equipped to perform stenting report successful stent deployment in 64–100% of cases, however there is a 5% incidence of colonic perforation following colonic stenting.²³ Other complications include stent migration (10%), bleeding (5%), pain (5%) and re-obstruction (10%). (See Chapter 11.12.)

Other means of preoperatively relieving the obstruction to allow bowel preparation and elective resection have been reported, including endoscopic laser ablation.²⁴ The experience with these modalities is limited.

In high-risk patients with major comorbid factors, the quickest and safest option is preferred, and in most settings this will be surgery.

When should primary anastomosis be considered?

Guideline — Surgery for large bowel obstruction	Level of evidence	Practice recommendation	Refs
Primary anastomosis should be considered as a colectomy, with an ileocolic or ileorectal anastomosis.	III-2	Equivocal	14,15,17–20
Primary anastomosis could be considered for left-sided obstruction and may need to be preceded by on table colonic lavage.	III-2	Equivocal	18,19, 21

13.5 Outcome

13.5.1 Morbidity and mortality

Patients presenting as emergencies tend to be older and have other comorbid illness.^{25,26} The duration of hospitalisation tends to be longer and there is a higher incidence of a permanent stoma.²⁵ Perioperative morbidity and mortality (19% compared to 8%) is higher and survival poorer (29% compared to 39% at five years), compared with patients undergoing elective surgery.²⁷

The operative mortality following emergency/urgent surgery for Colorectal Cancer has been consistently less than 20% in most recent audits of major centres.^{28,29} Subgroup analysis, however, revealed a higher (35% vs 15%) operative mortality after surgery for perforated Colorectal Cancer than for obstructed Colorectal Cancer,^{26,30,31} especially if major sepsis is present.

13.5.2 Cancer-related survival

Patients presenting as emergencies tend to have a more advanced-staged cancer.^{25,26,30,31} The only variable of prognostic significance in emergency surgery for obstructing Colorectal Cancer is the stage of the cancer.³²

With malignant large bowel obstruction, after taking into account 30-day operative mortality, obstruction as initial presentation *per se* does not appear to be an independent predictor of longer-term survival.

Perforation with generalised peritonitis is associated with a higher incidence of tumour recurrence and it is an independent adverse prognostic factor.^{26,30,33,34} Five-year survival may also be adversely affected by inadvertent perforation of the colon or rectum,³⁵ or spillage³⁶ during 'curative' resection for cancer.

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