

CHAPTER 10 PREPARATION FOR SURGERY

Most people with Colorectal Cancer will undergo surgery. Routine preoperative assessment includes a full medical history and physical examination. Haematological and clinical chemistry investigations should be performed. Other preoperative anaesthetic investigations may be appropriate. In particular, stress cardiopulmonary testing should be considered where any doubts exist about cardiac status.

Surgery should be avoided where the potential risks would appear to outweigh the potential benefits of the surgical procedure. This applies to patients who:

- are medically unfit for surgery — medical and/or anaesthetic consultations may be appropriate in this situation
- have advanced disease. However palliative surgery or neoadjuvant therapy may be indicated.

The decision not to operate depends on highly individual factors, so specific guidelines cannot be provided. It is important that the patient (and possibly relatives) is involved in the making of such a decision and that the reasoning for such a decision is clear to all concerned.

10.1 Informed consent

It is important to explain in detail to the patient the reasons for the proposed procedure, the likely outcome of the procedure, the probability of the procedure producing undesirable results, possible outcomes if the procedure is not carried out, any alternatives to the proposed procedure, and the prognosis (see Section 4.3).

A full and detailed preoperative discussion with the surgeon and the anaesthetist is essential in order for the patient to give their informed consent.

This may involve provision of written material. The patient must be in as settled a condition as possible before giving informed consent. Sometimes, more than one consultation is necessary and this should be made available to the patient when the patient or family desire it.

The patient (and relatives) must be given the opportunity to ask any questions they feel are relevant.

10.2 Preparation for stoma

Any patient undergoing surgery for Colorectal Cancer may require a stoma, so all patients should be warned of the relative likelihood of this possibility by the surgeon. The difference between a temporary and permanent stoma needs to be explained clearly. If there is a reasonable chance of a stoma, the patient should whenever possible be seen preoperatively by the stomal therapy nurse. This visit serves a number of purposes, including:

- identification of the role of the stomal therapy nurse
- assessment of physical, social, psychological and cultural factors
- initiation of patient teaching
- selection of stomal sites
- patient reassurance

What is the role of the stomal therapist?

Guideline — Postoperative stoma	Level of evidence	Practice recommendation	Refs
All patients who have a reasonable chance of a postoperative stoma should be prepared for this possibility. This includes a visit, where possible, by the stomal therapy nurse.	III-2	Recommend	1

A retrospective study has shown that patients who were visited preoperatively by the stomal therapy nurse had fewer adverse outcomes than those that who were not visited by the stomal therapy nurse.¹

10.3 Bowel preparation

In patients undergoing elective surgery for Colorectal Cancer, who do not have a bowel obstruction, mechanical bowel preparation is usually administered. Care should be taken to ensure adequate hydration, especially in the elderly.

A retrospective study comparing outpatient and inpatient bowel preparation has demonstrated that outpatient preparation is safe and effective, except for patients with multiple medical problems.²

A number of different mechanical bowel preparations are used. Polyethylene glycol and sodium phosphate preparations are the two used most frequently. Both usually produce adequate bowel preparation, and a number of randomised trials have demonstrated this.

An Australian randomised clinical trial demonstrated that sodium phosphate solution cleanses the colon more effectively than sodium picosulphate.^{3,4} Oliveira et al⁵ randomly assigned 200 patients having colorectal surgery to either polyethylene glycol or sodium phosphate bowel preparation. There was no significant difference in cleansing, or septic complication rates, however patients who had sodium phosphate reported significantly less trouble drinking the solution and less abdominal fullness and cramping. Due to electrolyte and fluid changes, the use of sodium phosphate is not recommended in the elderly, or in those patients with significant renal, cardiac or hepatic disease.⁶

Uncontrolled prospective trials and retrospective studies looking at the value of mechanical bowel preparation have produced conflicting results. There have been four published randomised studies that have randomly assigned patients to mechanical preparation or no mechanical preparation.⁷⁻¹⁰ Most recently, Miettinen et al¹⁰ reported on 267 patients, the largest study to date. There was no significant difference in the anastomotic leak rate (4% vs 2%), surgical site infection rate (6% vs 5%) or restoration of bowel function, between the group that had bowel preparation with polyethylene glycol and the group that had no preparation.

However, a Cochrane Collaboration systematic review of 1159 patients in six randomised controlled trials (RCT) has now been published.¹¹ The conclusion was that prophylactic mechanical bowel preparation before colorectal surgery has not proven of value to patients. The available evidence fails to demonstrate a reduction in anastomotic leak rates and other complications. Interestingly, more anastomotic leaks were discovered in the patients having bowel preparation who had undergone colonic surgery. However, for a number of reasons, including shortcomings in the RCTs and statistical evaluation issues, no statistical validity could be applied to the question of anastomotic leak. This finding was not seen after rectal surgery. Further well-planned RCTs to address the questions were recommended.

Should bowel preparation be given routinely preoperatively?

Guidelines — Bowel preparation	Level of evidence	Practice recommendation	Refs
<p>Bowel preparation is current standard practice before elective colorectal operations. However, recent randomised controlled trials have not demonstrated any conclusive benefit from this procedure. Accordingly, the previous guideline has been revised as follows:</p> <p>Mechanical bowel preparation is not indicated in elective colorectal operations unless there are anticipated problems with faecal loading that might create technical difficulties with the procedure. Eg. Laparoscopic surgery, low rectal cancers.</p>	I	Not recommend	11

10.4 Cross matching and blood transfusion

About 50% of patients undergoing surgery for Colorectal Cancer are given a blood transfusion over the perioperative period.^{12–14} The requirement for transfusion will depend on the preoperative haemoglobin and the extent of intraoperative blood loss.

A ‘group and hold’ is usually adequate preparation, as blood can be obtained within five to ten minutes of a request for cross match, as long as pathology staff are on site. This will obviously depend on the proximity of the transfusion service to the operating theatres.

A number of randomised studies have demonstrated a definitively increased risk of infection following blood transfusion during Colorectal Cancer surgery.^{15–19} The use of autologous blood has been demonstrated to cause fewer postoperative infections than transfusion of homologous blood.¹⁹ According to the patient’s wishes and the likelihood of a transfusion, autologous blood collection should be considered.

It is unclear whether there is an increased risk of Colorectal Cancer recurrence following transfusion during Colorectal Cancer surgery. Some prospective and retrospective studies have found an increased incidence of recurrence, while others have not.^{15,20–26}

Many patients with Colorectal Cancer are anaemic prior to surgery and autologous blood transfusion is not practical. Retrospective studies of blood transfusion in Colorectal Cancer surgery are complicated by multiple confounding factors and should be interpreted with caution. Patients who are anaemic prior to surgery are more likely to require transfusion, and are more likely to have larger tumours, which can result in technical difficulties. These factors are all stage independent and therefore difficult to control. Immunosuppression is a separate issue that indicates transfusion should be avoided where possible.

A recent meta-analysis of 32 studies (nine prospective) assessed the effect of perioperative blood transfusions on recurrence of Colorectal Cancer. It found a consistently detrimental association between the use of perioperative blood transfusion and recurrence of Colorectal Cancer. The recurrence rate was 38% in the transfused group compared with 26% in the non-transfused group. This yielded an overall odds ratio of 1.68 (95% CI, 1.54–1.83) and a rate difference of 0.13 (95% CI, 0.09–0.17) against patients who received a blood transfusion. Stratified meta-analyses also confirmed these findings when stratifying patients by site and stage of disease.²⁷

What happens if a blood transfusion is required perioperatively?

Guideline — Perioperative	Level of evidence	Practice recommendation	Refs
<p>Perioperative blood transfusion is to be avoided whenever possible because there may be a detrimental association between transfusion and recurrence.</p> <p>If a transfusion is required, autologous blood is preferable to allogeneic blood for reasons of infection control and resource use.</p>	III-2	Recommend	27

10.5 Thromboembolism prophylaxis

Cancer has been shown to be an independent risk factor for the development of thromboembolism.²⁸ In addition, patients undergoing a colorectal resection are at higher than average risk for developing a postoperative deep venous thrombosis (DVT) because these procedures tend to be of long duration, the patients are often in stirrups, and a pelvic dissection is commonly performed. A meta-analysis of appropriate trials in general surgical patients has demonstrated that prophylactic use of subcutaneous unfractionated heparin reduces the risk of DVT, pulmonary embolus and death.²⁹

A randomised double-blind trial comparing subcutaneous unfractionated heparin (5000 units calcium heparin every 8 hours and low molecular weight heparin (enoxaparin 40 mg once daily) as thromboprophylaxis in 936 patients undergoing colorectal surgery found low-dose calcium heparin and low molecular weight heparin to be equally effective in preventing thromboembolism in colorectal surgery patients. There were no deaths from pulmonary embolus in either group. The enoxaparin group had a significantly greater bleeding rate compared with the low-dose heparin group, although the risk of major bleeding and re-operation was not significantly different.³⁰

A meta-analysis of general surgical patients having intermittent calf compression intraoperatively demonstrates effectiveness in reducing the incidence of DVT in the presence of malignant disease.³¹

Australasian Best Practice Guidelines suggest unfractionated heparin or low molecular weight heparin and graduated compression stockings or intermittent pneumatic compression for high-risk surgical patients, which includes any patient over 40 years of age who is undergoing major abdominal surgery with cancer.³²

Should thromboembolic prophylaxis be given?

Guideline — Thromboembolic prophylaxis	Level of evidence	Practice recommendation	Refs
All patients undergoing surgery for Colorectal Cancer should receive prophylaxis for thromboembolic disease.	I	Strongly recommend	29
Unfractionated heparin, low molecular weight heparin, and intermittent calf compression are effective in reducing the incidence of thromboembolism.	II	Strongly recommend	32
Low molecular weight heparin has not been shown to be superior to low-dose heparin in colorectal surgical patients.	II	Strongly recommend	30

10.6 Antibiotic prophylaxis

Prophylactic administration of antibiotics decreases morbidity, shortens hospital stay and reduces infection-related costs.³³ The broad results were derived from 26 trials of patients given various antibiotics against controls given none. The authors suggest that the effect of antibiotics was shown so clearly that all further trials should employ a proven standard control, not no treatment. Many different antibiotic regimes have been shown to be effective, but in patients undergoing colorectal surgery, the antibiotics used should be broad spectrum, have an effective half-life and be active against both aerobic and anaerobic bacteria.

Song, in a recent systematic review and meta-analysis of randomised trials of antimicrobial prophylaxis in colorectal surgery, found no significant difference in postoperative wound infection rates in 17 trials that compared a single dose to a multiple-dose regimen.³⁴ Reducing the dosage of antibiotics reduces cost, the potential risks of toxicity and adverse side effects, and the risk of developing bacterial resistance.

Frequently-used agents such as cefuroxime and metronidazole, or gentamicin and metronidazole, have been shown in a multicentre prospective randomised trial to be adequate compared to other agents.³⁵

Most surgeons would now appear to favour the use of perioperative parenteral antibiotics over the oral route in view of same-day admissions and compliance issues.

Should prophylactic antibiotics be given?

Guidelines — Prophylactic antibiotics	Level of evidence	Practice recommendation	Refs
All patients undergoing Colorectal Cancer surgery require prophylactic antibiotics.	II	Recommend	33
A single preoperative dose of intravenous cephalosporin and metronidazole, or gentamicin and metronidazole, is an effective regime.	I	Strongly recommend	34

10.7 Body temperature

A randomised trial comparing perioperative normothermia to perioperative hypothermia has demonstrated a significant reduction in the rate of wound infection and length of hospital stay with maintenance of normal levels of temperature.³⁶

Normal levels of temperature are best achieved by using heated air blankets and fluid warming.

Should normal body temperature be maintained?

Guidelines — Maintenance of normothermia	Level of evidence	Practice recommendation	Refs
Perioperative normothermia should be maintained.	II	Recommend	36

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