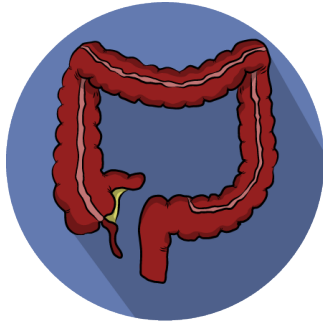


EUPEMEN PROTOCOL

COLON RESECTION

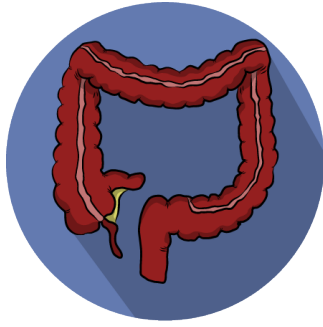
1	<p style="text-align: center;">Before Admission</p> <p style="text-align: center;">Anaesthetist, Surgeon, Nurse, Nutritionist, Stomal Therapist</p>
1.1	<p>Preoperative counselling The patient should be fully informed on procedure and perioperative course both verbally and in writing. Signed informed consent should be obtained.</p>
1.2	<p>Comprehensive medical assessment This should include medical history, physical examination, chest X-ray, blood tests (coagulation parameters, biochemical profile including C-reactive protein and full blood count) and electrocardiogram.</p>
1.3	<p>Frailty Assessment For patients over 65 years of age a frailty assessment should be performed.</p>
1.4	<p>ASA level assessment</p>
1.5	<p>Apfel score The risk for postoperative nausea and vomiting should be assessment with the Apfel score.</p>
1.6	<p>Compensation of chronic diseases All chronic diseases should be optimised before surgery. All cases of recent onset or active cardiovascular diseases should be evaluated by a cardiologist.</p>
1.7	<p>Evaluation of Diabetes Mellitus Blood glucose and HbA1c levels should be investigated. All cases of poorly controlled or previously undiagnosed diabetes should be referred to primary care or endocrinology before surgery.</p>
1.8	<p>Evaluation and management of anaemia and iron deficiency Iron deficiency anaemia should be ideally managed by parenteral iron administration.</p>
1.9	<p>Nutritional screening Nutritional screening should be done by using the <i>Malnutrition University Screening Tool (MUST)</i>. Patients at risk of malnutrition should receive oral nutritional supplements preferably immunonutrition for a period of 7 days before and 5 days after surgery.</p>
1.10	<p>Abandon tobacco and reduce alcohol consumption at least one month prior to surgery</p>
1.11	<p>Multimodal prehabilitation including aerobic and resistance exercises</p>
1.12	<p>Low-residue diet at least 5 days before surgery</p>



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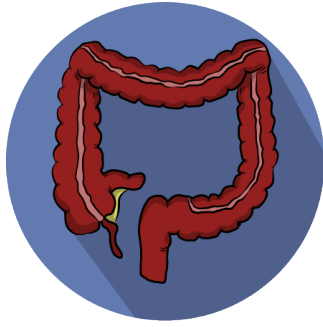
1.13	No mechanical bowel preparation except perioperative colonoscopy
1.14	Cleaning Enema Two cleaning enemas the afternoon before surgery (left-sided procedures)
2	Perioperative
2.1	Immediate Preoperative (Schedule admission the same day of surgery if possible) Anaesthetist, Surgeon, Nurse, Nutritionist, Stomal Therapist
2.1.1	Preoperative hygiene The patient is instructed to take a full shower or bath the evening or morning before the surgery.
2.1.2	Compression stockings or intermittent pneumatic compression Compression stockings or intermittent pneumatic compression should be worn from admission to hospital.
2.1.3	Low molecular weight heparin Low Molecular Weight Heparin should be administered 2-12 hours before surgery (depending on whether neuraxial anaesthesia is to be performed or not).
2.1.4	Carbohydrate drink A drink high in carbohydrates (12.5% maltodextrins) 800 ml should be given in the evening before surgery and 400 ml 2 hours prior to anaesthesia. For diabetic patients administer this together with antidiabetic medication.
2.1.5	Preoperative fasting Fasting of 6 hours for solids and 2 hours for clear liquids.
2.1.6	Shaving with electric razor The site where the incision will be performed should be shaved with an electric razor, if necessary.
2.1.7	Stoma marking (if expected)
2.1.8	Prophylactic antibiotics Prophylactic administration of antibiotic 30-60 minutes before incision. In prolonged procedures repeat doses according to the half-life of the drugs.
2.2	Intraoperative Anaesthetist, Surgeon, Nurse
2.2.1	WHO Surgical Safety Checklist



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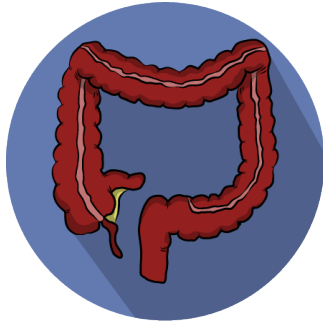
	The WHO Surgical Safety Checklist should be completed before incision is made.
2.2.2	Routine intraoperative monitoring Vital functions, FiO ₂ , anaesthesia depth, neuromuscular blockade and glycemia should be monitored during the procedure.
2.2.3	Minimally invasive surgery Minimally invasive approaches are preferred and should be used as much as possible. Intraabdominal pressure levels within 8-12 mmHg are recommended.
2.2.4	Avoid routine bladder catheterization
2.2.5	Invasive monitoring Invasive arterial catheter is not routinely required.
2.2.6	Central venous catheter Central venous catheter is not routinely required.
2.2.7	Induction and maintenance of anaesthesia Short-acting agents should be used for induction and maintenance of anaesthesia.
2.2.8	Oxygenation Patients should receive oxygen with a FiO ₂ of more than 50%.
2.2.9	Fluid therapy Hemodynamic optimization using goal-guided fluid therapy with validated devices is recommended in high-risk patients and in patients undergoing surgery with large blood loss. In other all cases, restrictive fluid therapy is recommended based on ideal weight in continuous perfusion, balanced solution (1-3 ml/kg/h for laparoscopy; 3-5 ml/kg/h for laparotomy). Blood loss should be compensated with 1:1 colloids.
2.2.10	Avoid nasogastric tube Nasogastric tubes should not be routinely used.
2.2.11	Prevention of hypothermia Temperature should be monitored and normothermia should be maintained by active heating (heated infusions, heated blanket).
2.2.12	Prophylaxis of postoperative nausea and vomiting Give antiemetic therapy according to the Apfel score.
2.2.13	Epidural analgesia Thoracic epidural analgesia should be used in open surgery. In laparoscopic surgery it is not routinely recommended. Patients with contraindication for epidural analgesia and who have a risk for postoperative renal failure or coagulopathy could benefit from bilateral transverse abdominis plane block,



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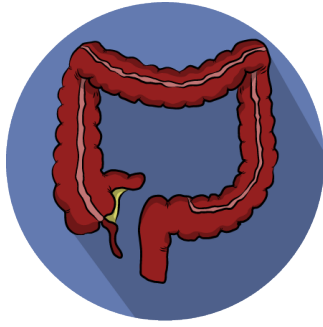
	infiltration trocars with local anaesthetic or other alternatives to epidural analgesia.
2.2.14	Intravenous analgesic adjuvants Recommended adjuvant analgesics are non-steroidal anti-inflammatory drugs, lidocaine, ketamine, magnesium sulphate and dexmedetomidine.
2.2.15	Perioperative glycaemic control For diabetic patients use local hospital protocol for diabetics undergoing surgery. In patients at risk of developing insulin resistance avoid blood glucose levels higher than 180 mg/dL.
2.2.16	Skin disinfection Skin should be disinfected centrally to peripherally with chlorhexidine in a 2% alcohol solution.
2.2.17	Avoid drains Abdominal drains should be avoided as much as possible.
2.3	Immediate Postoperative (Resuscitation Unit / Intermediate Care Unit) Anaesthetist, Nurse
2.3.1	Maintenance of normothermia Temperature should be regularly measured and normothermia should be maintained.
2.3.2	Opioid sparing analgesia Active or preventive multimodal analgesia should be used. Restrict the use of opioids. Aim for a VAS score of less than 3.
2.3.3	Restrictive fluid therapy
2.3.4	Early feeding Beginning of oral fluid intake from 6 hours after the surgery.
2.3.5	Respiratory physiotherapy
2.3.6	Early mobilisation Patients should sit up by 3 hours after surgery and should begin ambulation 8 hours after surgery with respect to night time hours for sleeping.
2.3.7	Thromboembolic prophylaxis Low Molecular Weight Heparin should be given 12 hours after surgery.
2.3.8	Prophylaxis of postoperative nausea and vomiting Give antiemetic therapy according to the Apfel score.



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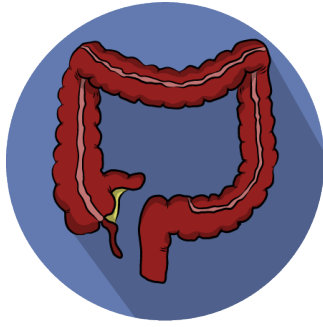
2.3.9	Maintenance of FiO2 0.5% for 2 hours after surgery
2.3.10	Perioperative glycaemic control For diabetic patients use local hospital protocol for diabetics undergoing surgery. In patients at risk of developing insulin resistance avoid blood glucose levels higher than 180 mg/dL.
3	Postoperative Day 1 (Ward) Surgeon, Nurse, Stomal Therapist
3.1	Early feeding A liquid or semi-solid diet should be started depending on tolerance.
3.2	Avoid intravenous infusions If patients tolerated peroral fluids withdraw intravenous fluid therapy.
3.3	Early mobilization Patients should be encouraged to move from bed to bed-side chair.
3.4	Opioid sparing analgesia Ensure good pain control. Aim for a VAS score of less than 3.
3.5	Remove urinary catheter If a urinary catheter has been inserted assess whether it can be removed.
3.6	Removal of drains Assess removal of drains, if present.
3.7	Respiratory physiotherapy
3.8	Thromboembolic prophylaxis Thromboembolic prophylaxis consisting of compression stockings or intermittent compression and low-molecular weight heparin should be give according to the local hospital policy.
3.9	Prophylaxis of postoperative nausea and vomiting Give antiemetic therapy according to the Apfel score.
3.10	Anti-ulcer prophylaxis
3.11	Perioperative glycaemic control For diabetic patients use local hospital protocol for diabetics undergoing surgery. In patients at risk of developing insulin resistance avoid blood glucose levels higher than 180 mg/dL.
3.12	Stoma care education (if present)



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3.13	Laboratory tests Blood tests including C-reactive protein should be performed.
4	Postoperative Day 2 Surgeon, Nurse, Stomal Therapist
4.1	Early feeding A semi-solid or solid diet should be given.
4.2	Avoid intravenous infusions Withdrawal of intravenous fluids if it has not been done previously.
4.3	Early mobilisation Patients should be able to walk short distances.
4.4	Opioid sparing analgesia Ensure good pain control. Aim for a VAS score of less than 3. Assess oral analgesia.
4.5	Remove urinary catheter (if it has not been done previously)
4.6	Respiratory physiotherapy
4.7	Thromboembolic prophylaxis
4.8	Prophylaxis of postoperative nausea and vomiting
4.9	Anti-ulcer prophylaxis
4.10	Perioperative glycaemic control
4.11	Continue with previous stoma care education (if present)
4.12	Laboratory tests Blood tests including C-reactive protein should be performed.
5	Postoperative Day 3 Surgeon, Nurse
5.1	Early feeding A solid diet should be given.
5.2	Early mobilisation Patients should be fully ambulated.



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5.3	Oral analgesia
5.4	Withdrawal of the venous line
5.5	Respiratory physiotherapy
5.6	Thromboembolic prophylaxis
5.7	Perioperative glycaemic control
5.8	Laboratory tests Blood tests including C-reactive protein should be performed.
5.9	Assess discharge criteria Consider discharge if there are no surgical complications that cannot be managed in an outpatient setting, no fever, pain controlled with oral analgesia, full ambulation, tolerance of oral intake of food and acceptance by the patient.
6	At discharge Surgeon, Nurse, Primary Care
6.1	Discharge documentation On discharge patients should be given personalized, understandable and complete information on hospital stay and recommendations for care at home.
6.2	Thromboembolic prophylaxis Thromboembolic prophylaxis should continue until 28 days after surgery.
6.3	Follow-up Patients should be followed-up in the first week after discharge in an outpatient setting or by telephone. Further check-up visits should be planned for 1, 3 and 6 months after discharge. A visit to the primary care physician should be organised and if needed home support should be coordinated.