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Review Article

Optimizing outcomes of colorectal surgery – The current perspectives



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ABSTRACT

Current discourse in science of surgery is largely dictated by patient reported outcomes. Surgery has come a long way from being the life saving to limb saving. Even clinical and functional outcomes have stabilized and follow a standard clinical pathway. There are efforts still going on to make patient return to his/her normal life at the earliest. This postoperative convalescence is being addressed by various protocols aimed at enhanced and speedier recovery after the surgery. This is specifically important in colorectal surgery. This article outlines the important components of the patient care for speedier recovery after colorectal surgery.

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1. Introduction

The march in the surgery has enabled us to think beyond life and limb preservation.¹ Patient reported outcomes (PRO) are the driving force behind this development^{2–4} and modifications will make the unwanted adverse events as 'never events'.^{5,6}

Traditionally, colorectal surgery is associated with a 20–25% risk of complications and 7–10 days of hospital stay. Modifications of PRO's at several substeps will lead to speedier recovery and decreased length of stay in hospital (LOSH). There are various guidelines available in the literature in this regard, namely the Enhanced Recovery After Surgery (ERAS), European Society for Clinical Nutrition and Metabolism (ESPEN) Guidelines, and International Association for Surgical Metabolism and Nutrition (IASMEN) Guidelines, which target speedier recovery after surgery.^{7–10} There are several modifications and revision of the ERAS guidelines over the years.^{11–13}

The various substeps of the patient care, which have an influence on the PRO, are briefly outlined.

1. Preadmission information, education, and counseling:

Surgical scars leave a permanent impact on the mind of the patient.¹⁴ Every patient planned for a surgical procedure is having an element of anxiety and fear for undergoing the operative procedure. Detailed information about the procedure, its usual outcome, and preoperative psychological counseling of the patient have shown to hasten the postoperative recovery and decrease LOSH.^{15–18} Detailed 'Informed Consent' is essential to make patients and their relatives aware of the available options for treatment and their possible complications, so that they can opt for the best for themselves. Informed Consent bridges the gap between the surgeon and the patient and also clears the misconceptions¹⁹ and is an effective tool for patient education.

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2. Preoperative optimization:

The preoperative physical conditioning, called the prehab, is considered as a factor, which influences faster recovery and improves surgical outcomes.²⁰⁻²⁶ Physical conditioning can be in the form of physical or yoga exercises, which stimulates a state of natural stress response. Such patients who are preconditioned with prehab or yoga exercises do better when subjected to the surgical stress.²⁷⁻³⁰

Ethanol abuse and smoking also makes patient vulnerable to the undesired side effects like bleeding, wound infections, and cardiopulmonary complications.³¹⁻³³ A minimum of 1 month of abstinence is advised.

3. Preoperative mechanical bowel preparation:

Mechanical bowel preparation (MBP) used to be the routine before any major abdominal surgery. It is a well-supported fact that MBP is associated with adverse physiological effects attributed to dehydration,³⁴ is distressing for the patient, and is associated with prolonged ileus after major colorectal surgery. A recent study suggested that the routine use of MBP is not necessary before major abdominal surgery and does not affect the mortality rates, anastomotic leak, reoperation rates, and wound infections.³⁵ MBP of patients posted for laparoscopic colorectal surgery is also a matter of debate. Though laparoscopic colectomy can be safely done without MBP, situations needing intraoperative colonoscopy to localize small tumors make MBP necessary.

4. Preoperative fasting and carbohydrate treatment:

A recent meta-analysis showed that fasting from midnight has no role in reducing the gastric contents or raising the pH of stomach juices as compared with patients who were allowed to take clear fluids until 2 h before anesthesia.^{36,37} National & European Anesthesia Society recommends intake of clear fluid until 2 h before induction of anesthesia.³⁸⁻⁴¹ This may be modified in patient suffering from morbid obesity and uncontrolled diabetes.

Carbohydrate pretreatment results in less postoperative losses of nitrogen and protein,^{42,43} as well as better maintained lean body mass and muscle strength.⁴⁴⁻⁴⁶

Such preconditioning provides patient those extra bit of calories and muscular strength to mobilize early and a successful speedy recovery (Table 1).

5. Preoperative medications:

Walker and Smith⁴⁷ concluded that patients receiving oral anxiolytic within 12 h before surgery showed impairment in psychomotor function postoperatively, which reduces the patient's ability to mobilize, eat, and drink. Postoperative fatigue and sleep disturbances affects the patient's health-related quality of life (HrQoL) for up to 3 months. They have been specifically linked to neuro-immuno-humoral peritoneal axis.^{48,49}

Failure to mobilize early postoperatively is the single, most important factor responsible for prolonged hospital stay. The role of prehab and physical or yoga exercises comes into play,

as an accustomed patient will take less time to mobilize.²⁷⁻³⁰ Thus administration of sedatives for anxiolytics given by oral route is best avoided.

6. Thromboprophylaxis:

Patients undergoing major abdominal or colorectal cancer surgery, especially pelvic surgery, should receive mechanical thromboprophylaxis with well-fitted compression stockings, because these have shown to significantly decrease incidence of DVT postoperatively.⁵⁰

At-risk individuals are those with⁵¹ the following characteristics:

- Malignant disease
- Previous pelvic surgery
- Patients on corticosteroids
- Patients with extensive comorbidities like DM, hyperlipidemia, and hypothyroidism
- Hypercoagulable state

Pharmacological thromboprophylaxis with LMWH or unfractionated heparin is indicated in these high-risk group patients. Kwon et al.⁵² demonstrated that pharmacological prophylaxis reduces the prevalence of symptomatic venous thromboembolism from 1.8% to 1.1% and also reduced overall cancer mortality. Once-daily LMWH is as effective as twice-daily administration.^{53,54}

7. Antimicrobial prophylaxis and skin preparation:

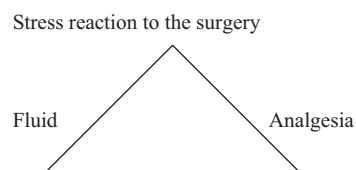
The use of antibiotic prophylaxis for patient undergoing colorectal surgery reduces the risk of surgical site infections.⁵⁵ The best time for administration is 30-60 min before the incision is made.⁵⁶ Repeated dose of antibiotics is also beneficial in prolonged procedures.⁵⁷ The spectrum of antibiotic administered should cover both aerobic and anaerobic bacteria.

A study comparing different types of skin-cleansing agents showed that overall incidence of surgical site infection was 40% lower in a chlorhexidine vs betadine skin preparation group.⁵⁸

The preferred method of part preparation/hair removal is hair clipping as compared to shaving with razors, although the timing of hair removal does not seem to affect the outcome.

8. Standard anesthesia protocol:

The 3-key elements in which an anesthetist plays a role and can affect surgical outcomes are as follows:



Recognition of the importance of these components has led to the description of a "Trimodal Approach" for optimizing outcomes in laparoscopic surgery.⁵⁹

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