

## **Surgical Intervention in Patients with IBD: Be Prepared!**

### **How Pre-Operative Management Can Change the Post-Operative Outcome**

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#### **Abstract**

Surgical management of inflammatory bowel disease (IBD) still presents a challenge for surgeons. Pre-operative optimization (PO) is a bundle of measures to bring the patient in optimal condition to surgery and to reduce the risk of unfavorable post-operative outcome. PO in patients with IBD is often suboptimal, and the evidence supporting it is scanty calling for more attention. This mini-review shows the most important pre-operative measures that can optimize the patients with IBD. These measures are optimization of medical treatment, nutritional support, treatment of pre-operative sepsis, thrombosis prophylaxis, bowel preparation, pre-operative antibiotics treatment, cessation of smoking and psychological support. This bundle is to be provided by a multi-disciplinary team, which includes gastroenterologist, surgeon, IBD nurse, dietitian, radiologist and other health care providers if needed.

**Keywords:** *Surgical Intervention; Inflammatory Bowel Disease (IBD), Crohn's disease, operation, surgery, complications*

#### **Introduction**

Surgical management of inflammatory bowel disease (IBD) still presents a challenge for surgeons. The timing of operation depends on disease severity, disease presentation, medical treatment, patients' perspectives, and pre-operative optimization (PO) [1]. PO is used to bring the patient in optimal condition to surgery and to reduce the risk of unfavorable post-operative outcome [2]. PO in patients with IBD is often suboptimal, and the evidence supporting it is scanty calling for more attention [3]. Keywords: Surgical Intervention; Inflammatory Bowel Disease (IBD) Few studies attempted to provide evidence-based clear recommendations for PO of patients with IBD. There is a need for well-designed prospective studies to explore the effect of PO on post-operative outcome and length of stay in hospital. PO might also be a factor in reduction of health care costs. The PO typical regime can be summarised as follows

#### **Cardinal factors in pre-operative optimization of patients with IBD**

##### **Pharmacological considerations**

##### **Pre-operative medications**

The impact of corticosteroids on surgical outcome was investigated in a meta-analysis of observational studies which showed an increased risk of all post-operative complications especially infectious complications. Gradual withdraw of steroids should be attempted, so that the patient is steroid free for 1 week prior to surgery Oxford evidence level IIb.

Two reviews investigated the Immuno-modulators' effect on post-operative complications and found no increase in the risk of post-operative complications [5,6]. No indication to withdraw immunomodulators prior to surgical intervention Oxford evidence level III.

There are 106 studies about the impact of anti-tumor necrosis factor- $\alpha$  agents (anti-TNF- $\alpha$ ) on post-operative outcome with divergent conclusions [7]. It seems that the impact of anti-TNF- $\alpha$  is affected by an interplay of many factors; the most important of these factors are disease severity, nutritional status, concomitant steroid treatment, drug concentration in blood and the presence of anti-drug antibodies. Withdrawal of anti-TNF- $\alpha$  is not supported by current evidence Oxford evidence level III.

### **Steroid stress dose**

This, well entrenched practice, is based on two case reports from 1960s. No evidence to support administration of supra-physiological dose of steroid at the induction of anaesthesia in patients on regular steroid treatment [8]. The patient need only his/her regular steroid dose at the day of operation Oxford evidence level Ib.

### **Nutritional support**

An abundance of studies described the effect of nutritional therapy on remission of IBD, but the evidence of nutrition as a PO factor is less studied [9,10]. There are two rationales for nutritional support prior to surgery. First, treatment of malnutrition is advised since it has been well established that malnutrition is an important risk factor for post-operative complications and mortality [11]. The second is to modify the underlying inflammatory process and reduce disease activity prior to surgery. Reviews conclude that nutritional support for malnourished CD patients (at least 10 - 14 days prior to surgery) is important and that parenteral nutrition should only be used for those who cannot tolerate enteral nutrition [12-14]. All IBD patients should be screened for malnutrition pre-operatively. There is no standardized test for malnutrition. The European Society for Parenteral and Enteral Nutrition recommend NRS-2002, which primarily considers four clinical parameters: BMI, weight loss, reduced dietary intake, and severe illness [15]. Malnutrition must be corrected prior to surgical intervention. Anaemia can be treated with ferric injections Oxford evidence level III.

### **Thrombosis prophylaxis**

It is well established that patients with IBD carry a high risk of venous thromboembolism (VTE) [16-18]. The mechanism of hypercoagulability in IBD is multifactorial and consists of acquired factors such as inflammation, vitamin deficiencies, surgery, steroid therapy, and fluid depletion along with a pro-thrombotic condition and hypercoagulability state [17].

All current guidelines recommend the use of anticoagulants to prevent VTE in all hospitalized IBD patients. However, data is regarding thrombosis prophylaxis in patients with IBD undergoing surgery is scanty. A recent systematic review [4] identified six retrospective studies investigating the incidence of post-operative VTE in patients with IBD [19].

Patients with IBD, who are not at high risk of bleeding, should receive pre- and post-operative anticoagulants during their hospital stay in order to prevent VTE.

The evidence supporting 4 - week thrombosis prophylaxis after discharge is scanty Oxford evidence level III.

### **Treatment of pre-operative sepsis**

The presence of intra-abdominal abscess at the time of surgery is risk factor for post-operative septic complications [11,20]. Treatments include antibiotics (Abs), percutaneous abscess drainage (PAD) and surgical drainage (SD). There is a significant increase in the use of PAD and decrease in SD. Ultra-sound or CT-guided drainage of abscess is recommended prior to surgery, preferably with antibacterial coverage. There is no clear recommendation in the literature about how many days/weeks surgical intervention should be performed after abscess drainage Oxford evidence level III.

### **Prophylactic antibiotics**

Administration of AB prophylaxis prior to surgery is nowadays embedded into surgical practice with significant effect on the rate of surgical site infections (SSIs) [20]. Timing of administration is debated and evidence is lacking in IBD [20]. The effect of AB therapy for a longer period other than the routine perioperative administration is still unclear [21-23]. Zerbib, *et al.* described 78 patients with CD who underwent PO including over 2 weeks of intravenous AB, withdrawal from steroids and immunosuppressive therapy, abscess drainage, and nutritional support [24]. The study showed low rates of morbidity (18%) and no mortality in treated patients. Oral AB 24 hour prior to open surgery might be considered complementary to IV perioperative AB. However, this short interval can cause microbes resistant. Longer peri-operative AB treatment is not supported by evidence Oxford evidence level III.

### Bowel preparation

Although bowel preparation (MBP) prior to surgery is discussed extensively in the literature, there is little data about this pre-operative measure specifically in patients with IBD. Literature on the subject refers to IBD as part of a larger group of diseases treated surgically.

Two large studies compared patients that received mechanical bowel preparation with or without oral ABs with patients who did not receive bowel preparation [23,25], showed that MBP with oral ABs prior to surgery could reduce the rate of surgical site infections, length of stay at hospital, and readmission rate. A recent study by Iesalnieks, *et al.* concluded that pre-operative MPB should be strongly considered before colorectal surgery in patients with CD, especially in patients undergoing ileocolic resections for penetrating disease [26]. Combined ABs and mechanical bowel preparation prior to IBD surgery is recommended Oxford evidence level III.

### Smoking cessation

Smoking has a significant effect on the course of IBD. There is a fair amount of data about the effect of smoking and smoking cessation on the clinical course of IBD. However, only a few studies addressed the effect of smoking cessation on the surgical outcomes [27-29]. All patients with IBD should be advised to stop smoking prior to elective surgery Oxford evidence level III.

### Other considerations

In addition to the above-mentioned interventions, treatment of co-morbidities, psychological support, multi-disciplinary approach to manage patients with IBD in high volume hospital might also have an impact on post-operative outcome and must always be addressed. Pre-operative optimization may reduce the unfavourable post-operative outcome [30].

A bundle of measurements to optimize patients with IBD is mandatory to improve post-operative outcome. Among the most important elements in this bundle are withdrawal of steroids, nutritional support [31], prophylaxis against thromboembolism, prophylactic antibiotic, combined mechanical and oral antibiotic for bowel preparation.

### Conclusion

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