Enhanced recovery pathway in colorectal surgery 1: background and principles

An outline of the main components of an enhanced recovery pathway, including details of care pre-operatively, during surgery and post-operatively

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This first in a two-part unit outlines background on the enhanced recovery pathway in colorectal surgery.

Enhanced recovery is used in colorectal surgery to optimise care for patients before, during and after their operations. It can be used in other specialties. The pathway includes a number of activities that nurses should explain to patients so they understand these principles.

There are some major changes from traditional post-operative care after colorectal surgery. The most obvious one is that fluids and food are allowed and, in fact, encouraged after surgery on the same day as the operation. In addition, early mobilisation by sitting in a chair on the evening after surgery and walking the following day are recommended if a patient’s condition allows.

INTRODUCTION

Enhanced recovery is a multimodal pathway of care that involves all the multidisciplinary team. There are 17 elements (plus audit) that are important to understand (Box 1, p24).

Enhanced recovery is not a new concept – it has been carried out for over a decade in Europe. It is now rapidly being implemented in the UK, particularly by laparoscopic surgeons, such as those at St Mark’s Hospital in Harrow, Middlesex. Colorectal surgeons who choose to perform open surgery can also use elements of the package.

Although some centres may be able to discharge patients home safely after only two days following laparoscopic bowel surgery, a target of 3–5 days after surgery is more realistic. Following open surgery, a few extra nights in hospital are usually necessary (Faiz et al, 2009).

There are a number of colorectal operations that can be performed (Box 2, p24).

CHANGES IN PRE-OPERATIVE CARE

Before surgery it is essential to ensure patients are as well prepared for the operation as possible. This includes not just optimising their physical condition but also preparing them by providing information on pre- and post-operative expectations. Pre-conditioning is an important part of enhanced recovery. Planning for discharge before admission guides patients’ expectations.

One of the principles of enhanced recovery care is that oral bowel preparation is avoided; while this is not current practice in many centres, it helps prevent electrolyte imbalance and dehydration, particularly in older patients.

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opiates, which have adverse effects on the bowel, can be avoided as much as possible in an enhanced recovery programme.

Short-acting anaesthetic agents are also advocated and long-acting pre-operative sedatives are avoided to reduce sedation after the operation.

Minimally invasive surgery is encouraged, which means that laparoscopic surgery or open surgery performed through small incisions are the operations of choice.

Although IV fluids are given during surgery, these are often given in considerably smaller volumes than during ‘traditional’ care. Fearon and Luff (2003) discussed the careful use of IV fluids, particularly normal saline, when too much salt is often given, causing a prolonged output of fluids, particularly normal saline, when too much salt is often given, causing a prolonged fluid retention by the body. In the enhanced recovery programme, drains or nasogastric tubes at the end of surgery are generally avoided.

**POST-OPERATIVE CARE**

The hospital stay after colorectal surgery for patients having established perioperative care is generally 1–2 weeks (Schoetz et al, 1997). Using an enhanced recovery pathway, they are discharged from hospital within 2–5 days after surgery (Wind et al, 2006). Therefore, using laparoscopic surgical techniques and an enhanced recovery pathway can reduce hospital stay. Nursing interventions can influence the post-operative care of this patient group and these are explored below.

**BOX 1. ELEMENTS OF THE ENHANCED RECOVERY PATHWAY**

- Pre-admission information
- No oral bowel preparation before colonic surgery
- No prolonged fasting
- No long-acting pre-medication
- No nasogastric tubes immediately after surgery
- Thoracic epidural analgesia
- Anaesthetic techniques that allow early recovery and minimise nausea
- Changes in perioperative fluid management
- No drains
- Active warming during surgery
- Early mobilisation after surgery
- Improved post-operative analgesia
- Prevention of nausea and vomiting
- Stimulation of gut motility
- Early removal of urinary catheters
- Early post-operative feeding
- Providing a helpline after discharge during the first two weeks
- Audit of compliance


**BOX 2. TYPES OF COLORECTAL SURGERY**

- Abdominoperineal excision of the rectum (APER/ APR/APR) with colostomy
- Anterior resection +/- loop stoma
- Colonic resection
- Hartmann’s procedure with colostomy
- Subtotal colectomy (STC)
- Total colectomy with ileostomy or ileo-rectal anastomosis (IRA)
- Panproctocolectomy and ileostomy
- Ileal pouch-anal anastomosis (IPAA)

**On return from recovery (day 0)**

On return from the recovery unit, patients’ observations – temperature, pulse, blood pressure, respiration and oxygen saturation levels – are monitored closely. Fluid balance charts are maintained, with input and output monitored meticulously. Patients will have been prescribed IV fluids according to a regimen, avoiding normal saline and ideally stopping after 24 hours (Billeyard et al, 2007).

Urine output is usually via a urinary catheter and is monitored hourly. An output of one-third of a ml/kg/hour averaged over eight hours is acceptable. This varies considerably from traditional care, which is half a ml/kg/hour for each hour. Patients should also be observed and should be warm, well perfused and with satisfactory observations if this lower urine output is to be accepted.

Wound sites are monitored for signs of bleeding and bruising. Port sites where laparoscopic instruments have been introduced are usually closed using absorbable sutures and the skin surface is closed with cyano-acrylate glue. Patients will also have a slightly larger wound through which the specimen has been removed. The use of glue and small incisions will further reduce abdominal scarring.

Pain relief is normally administered via an epidural or patient-controlled analgesia (PCA) system. Soop et al (2006) said a mid-thoracic epidural is often considered to be the cornerstone of an enhanced recovery programme. Epidural observations are monitored closely to ensure that patient safety is maintained by measuring the level of the block and checking the insertion site.

Paracetamol 1g qds is given as an adjunct to the epidural or PCA; this can be administered orally or intravenously. Analgesia in addition to the epidural or PCA is known as a multimodal approach.

Once the epidural has been removed, paracetamol and other drugs such as ibuprofen and/or short-acting oxycodone are used for short-term post-operative pain.

If patients have undergone a stoma-forming surgical procedure, the stoma is monitored. The checks include colour, warmth and excessive bleeding.

Early mobilisation is important to reduce complications of immobility, such as chest infections. Patients are encouraged to sit in a chair for two hours on the day of surgery to promote deep breathing (Francis, 2008). They receive oxygen therapy until fully mobile, commonly via nasal specula.

Oral intake is encouraged post-operatively and patients should aim to drink 1L on day 0 and eat a normal diet. Initially, they are offered a drink; if they tolerate this, they are given a nutritional supplement drink and they are expected to consume 400ml (two cartons) after the operation on the day of surgery (Fearon et al, 2005).

Once patients can consume oral fluids without nausea or vomiting, they can progress to solid food.

**Day 1 post-operatively**

Observations are monitored regularly. Strict fluid balance charts are also maintained and any bowel movement is documented. Patients are also weighed daily; this helps in assessing fluid balance. IV fluids are stopped as long as patients are tolerating drinks.

The urinary catheter is usually removed. King et al (2006a) recommended that catheters are removed on day 1 for colonic resections and day 3 for rectal resections. Some centres remove catheters at day 2. Urine output is still monitored closely after catheter removal.

A study by Wald et al (2008) showed that a urinary tract infection was more likely to occur if catheters were in situ for longer than two days. However, this needs to be balanced against the risk of other complications if catheters are removed prematurely.

Routine blood tests are taken daily until day 3 to monitor full blood count and urea and electrolytes.
Analgesia is an epidural or PCA and additionally paracetamol. On day 1, an NSAID such as ibuprofen 400mg tds is added to provide pain relief. Caution should be used in giving NSAIDs to older patients and those with renal impairment (British National Formulary, 2009); for these two patient groups, short-acting oxycodone may be used.

Patients should be encouraged to mobilise by walking 60m four times each day. If they are well enough, they should ideally sit in a chair for at least eight hours, preferably in their own clothes (Francis, 2008).

Oral intake should be at least 2L, including three nutritional supplement drinks. Patients should take their meals in the ward dining room, which encourages mobility and helps to increase independence (Billyard et al, 2007).

**Days 2 and 3 post-operatively**

On these days nurses should carry out the following:
- Monitor observations regularly;
- Maintain fluid balance chart;
- Remove urinary catheter as appropriate, if not removed on day 1;
- Observe wound(s), change dressing if needed;
- Epidural or PCA is removed (day 2), oral analgesia continues;
- Mobility and diet – continue as on day 1;
- Patient education – remind patients about their role in the enhanced recovery programme;
- Start discharge planning.

Hendry et al (2009) said that patients who achieve the enhanced recovery programme’s post-operative goals are likely to make good progress and potentially have an accelerated recovery.

**DISCHARGE**

Discharge planning before admission is imperative (Billyard et al, 2007). This process is usually started when patients are seen in the pre-assessment clinic before surgery.

Fearon et al (2005) said that patients are fit for discharge after enhanced recovery surgery once the following criteria have been met. They must:
- Have good pain control with oral analgesia;
- Be taking solid food with no IV fluids;
- Be independently mobile or at the same level as pre-operatively;
- Meet all of the above criteria and be willing to go home.

At St Mark’s Hospital, patients on the enhanced recovery programme are discharged home with an information leaflet, including a telephone number for the ward in case they have problems once they return home. Problems covered in the leaflet are abdominal pain, wound care, bowel habit and passing urine. Patients are advised to contact the ward for advice if they have any problems within two weeks of surgery.

The enhanced recovery programme facilitates patients’ early discharge. This means that potentially serious complications, such as anastomotic leakage, could occur at home (King et al, 2006a), although leakage after discharge is exceptionally rare. Therefore, it is essential that patients know how to contact the hospital immediately if they experience post-operative complications in the community.

The leaflet also discusses areas such as diet, exercise, work, driving and hobbies/activities. An outpatient appointment is normally scheduled for two weeks post-operatively for patient review (Francis, 2008).

There have been and continue to be concerns that enhanced recovery is simply a way to fast-track patients through hospital. However, our own experience and research suggests that patients are well and fit to return home and there is no deterioration in their quality of life (King et al, 2006b).

Some would even suggest enhanced recovery means there is a better short-term quality of life, and long term the scars are smaller so are more cosmetically acceptable.

**CONCLUSION**

There are many facets to enhanced recovery and it can be difficult to establish if some of these factors are any more or less important than others. It is vital for nurses to understand the principles of enhanced recovery to guide patients and their relatives, helping them understand how they can be involved in their own care.

The aim of enhanced recovery is to encourage mobility, eating, drinking and independence in the post-operative period. It is also important to recognise when recovery is not going according to plan and to treat appropriately.

The enhanced recovery pathway has also been used successfully in orthopaedic surgery and for people undergoing liver resections (van Dam et al, 2008).

**Part 2 of this unit, to be published in next week’s issue, examines managing post-operative complications in an enhanced recovery pathway.**

**REFERENCES**


