INTRODUCTION
The enhanced recovery pathway is a combination of elements used to improve patients’ post-operative recovery from colorectal surgery. It includes early eating and drinking and mobilisation.

However, complications can occur, as with any surgery. The more common post-operative complications related to bowel surgery are discussed, including nausea, abdominal distension and abdominal pain.

POST-OPERATIVE COMPLICATIONS
By implementing an enhanced recovery programme, an appreciable reduction in hospital stay can be achieved through combining a series of evidence-based interventions in the perioperative period (Kehlet and Wilmore, 2002).

Nausea and vomiting
Zeitz (2004) showed that nausea and vomiting were the most frequent complications recorded in the first 24 hours post-operatively.

With enhanced recovery, early feeding is advocated (Gatt et al, 2005). As discussed in part 1 of this unit, patients are encouraged to drink and eat within hours of returning from the operating theatre.

If they feel nauseous or vomit, they are encouraged to have an anti-emetic to promote early return of oral intake (Fearon et al, 2005).

A number of anti-emetics are available, with differing modes of action but it is recommended that no more than two are administered concurrently.

If patients continue to vomit despite anti-emetics, or are becoming distressed and/or have increased abdominal pain, with a tachycardia, then post-operative ileus or other complications should be considered.

Post-operative ileus
Post-operative ileus (POI) is a well-recognised consequence of abdominal surgery, particularly after colonic surgery (de Castro et al, 2008). Leier (2007) said it is not life-threatening but is an extremely morbid and expensive post-operative complication and the most frequent reason for a prolonged stay in hospital after abdominal surgery.

POI is defined as a transient impairment of intestinal motility after abdominal surgery (Han-Geurts et al, 2007). Many factors have been shown to influence its development (Bisanz et al, 2008):

- Local intestinal inflammation;
- Anaesthetic agents;
- Overhydration;
- Post-operative analgesia ( opiates);
- Reduced mobility.

Minimally invasive surgery reduces the systemic inflammatory response (Holte and Kehlet, 2005).

Other components of the enhanced recovery programme aim to reduce the occurrence of POI. These include the use of epidurals for post-operative pain relief instead of patient-controlled analgesia (PCA) with opiates.

Once it is established that a patient has developed POI, oral intake should be stopped, except for sips of water for comfort.

Treating POI
POI is often diagnosed with symptoms such as vomiting, abdominal distension, pain and failure to pass flatus or faeces. If there is also tachycardia, other causes should be investigated.

Treatment may include inserting a nasogastric (NG) tube and the reasons for this should be explained to patients. NG tubes decompress a full stomach, improve nausea and control vomiting. Once inserted, the tube can initially be aspirated to decompress stomach contents. Aspiration should relieve feelings of nausea. Subsequently, the tube can...
be left on free drainage and aspirated when patients feel nauseous or have the urge to vomit, or by regular aspirations every four hours. If the output is minimal, patients may be allowed to drink while they have the tube.

To provide hydration, IV access is established and IV fluids are started. Fluid balance charts should be maintained accurately, ensuring input and output are documented carefully.

A reduced urine output and high NG output should alert nurses to possible dehydration. Taking into account patients’ blood results, particularly urea and electrolytes, an appropriate IV fluid regimen should be formulated. Schuster and Monte (2002) established a correlation between POI and low plasma chloride, sodium and potassium, and hypomagnesaemia.

The return of gut function is heralded by the passage of flatus or stool per rectum or via stoma if present. Pain and distension will resolve and appetite will return.

Once it is clear that the POI is resolving, the NG tube is removed and patients are encouraged to drink. If they do not show any further symptoms, then food can be reintroduced.

If a patient has POI lasting 7–10 days, IV nutrition may need to be started because of prolonged fasting (Frost, 2008).

Recent literature has featured discussion on different approaches to reduce POI. One area that has received some interest is the use of chewing gum as a form of ‘sham feeding’ (fooling the body into thinking the person is eating). Schuster et al (2006) found that gum chewing was an inexpensive and beneficial addition to post-operative care after colostomy formation. Chan and Law (2007) showed that chewing gum in the post-operative period may be a simple and safe method of stimulating bowel motility and reducing ileus after surgery.

Parnaby et al (2009) found that, although flatus and faeces were passed earlier in patients who chewed gum, the practice did not reduce hospital stay or complications. So, although it is safe, gum-chewing has an unconfirmed role after colorectal surgery.

Treating post-operative nausea, vomiting and POI can be complex. Patient care requires a multimodal approach to facilitate recovery. It should also be noted that POI can be associated with peritonitis and may be difficult to differentiate from an obstruction in the early post-operative days (Leaper, 2003).

CASE STUDY: RECOVERY AFTER ANTERIOR RESECTION

Peter Jones* is a 73-year-old man who was recently diagnosed with a rectal tumour. The cancer was picked up in an examination following rectal bleeding and confirmed by colonoscopy. The tumour measured 12cm from the anal verge so the planned surgery was an anterior resection.

This operation involves the removal of part of the rectum and sigmoid colon and the rejoining of the colon, sometimes with a temporary loop ileostomy to allow the anastomosis (join) to heal.

At pre-assessment, it was noted that Mr Jones was a heavy smoker, which had led to COPD. Tests were performed to check his lungs, including a lung function test. After assessment by the anaesthetist, surgery was planned for two weeks’ time. Mr Jones could walk two flights of stairs pre-operatively and was advised to stop smoking, which he did.

At the time of the nursing assessment, it was apparent Mr Jones had good support from his wife, family and neighbours. He lived in a bungalow and liked to care for his garden and went to the pub every Friday to meet his friends.

Before the operation, Mr Jones’ preparation followed the protocol outlined in part 1 of this unit. He was given two carbohydrate-loading drinks three hours before his planned surgery time and was then kept nil by mouth.

When Mr Jones returned to the ward (day 0), he had a thoracic epidural, IV fluids and a urinary catheter. He was also encouraged to drink, as tolerated, and had water and a cup of tea. At dinner time he had a few mouthfuls of solid food but did not feel hungry. He was encouraged to have an energy drink, which he found rich but tolerated most of it.

Mr Jones had no pain at rest and minimal discomfort on coughing. He had a little nausea but did not feel an anti-emetic was necessary.

The next morning (day 1), despite the nausea still persisting, Mr Jones managed a small amount of breakfast, some water and a cup of tea. He was helped to sit in a chair for breakfast and then to walk the length of the ward. The IV fluids were to be stopped when oral intake was good.

However, later that morning Mr Jones felt nauseous and vomited 400ml. At this stage he was given an anti-emetic and the IV fluids were still running. He was advised to have only sips of water for comfort for the next two hours and see how he felt after this period.

After two hours he felt much better and, although he did not eat lunch, he managed to eat a reasonable-sized portion of supper.

The next day (day 2), the catheter, IV fluids and epidural were removed. Oral analgesia continued with good effect and Mr Jones was able to walk the length of the ward several times.

The following day (day 3) he passed first flatus and then faeces. He was discharged home the following day.

Mr Jones had no further vomiting and, once home, continued to improve. At his clinic appointment two weeks later, he was still not smoking and had been out in his garden but had not performed any heavy tasks such as digging.

He asked if he could drive again and was advised it was appropriate as long as he felt safe to perform an emergency manoeuvre. He stopped all analgesia and was going to the pub later that week with friends.

This case study shows that patients may have co-morbidities and experience some post-operative complications but that recovery still remains extremely good. Mr Jones and his wife were amazed and pleased with how well he felt so quickly after surgery. *The patient’s name has been changed.

MOBILISATION

Patients are not passive recipients of care; they need to be motivated to participate in an enhanced recovery programme and attain agreed goals.

This process begins in the outpatient setting when patients attend their pre-assessment visit. The importance of regular deep-breathing exercises and early mobilisation is reinforced.

High-risk patients should be identified at this visit and reviewed by an anaesthetist and surgeon for suitability for surgery. Enough time should be given to all patients in order to reinforce their understanding of the enhanced recovery programme.

On return from the operating theatre, patients are encouraged to sit out of bed in a chair on the day of surgery. Moving around in an upright position appears to be of most benefit in the early post-operative period. This appears to improve lung function (Nielsen et al, 2003) and reduce lung complications (Mackay et al, 2005).

The greatest restriction on patients’ willingness to mobilise is inadequate pain control. In the initial post-operative period, it is essential to monitor the epidural or PCA closely to ensure that enough analgesia is
delivered to the patient. If pain is uncontrolled, a suitable alternative should be considered promptly.

As patients progress through the pathway, pain can increase as more activity is carried out. Therefore, it is imperative that adequate oral analgesia is given to help deep breathing and mobilisation.

Initially, paracetamol with a suitable NSAID should be used. For some patients, it may be appropriate to give a prescribed oral opiate as needed to improve pain relief. However, a side-effect of opioid use is impaired gut function.

Physiotherapists are vital in the early post-operative period in helping with deep-breathing exercises and mobilising patients. The physiotherapist routinely sees patients on the first post-operative day and an assessment is completed to see how they can be helped to meet their daily targets.

It is possible that patients will need to cough or sneeze in the post-operative period. This can be painful despite adequate analgesia. It is important, however, to encourage coughing. Nurses can advise patients to hold their hands firmly on their abdomen and even push slightly to reduce pain. Some people use a cushion or pillow to help.

Implementing an enhanced recovery programme is labour intensive and needs dedicated resources. Some hospitals employ an enhanced recovery facilitator to ensure the programme’s smooth running and high compliance among patients.

The enhanced recovery facilitator is important in motivating patients, complements ward staff and prompts patients to carry out activities that enable safe and early discharge.

**BOWEL FUNCTION**

It is traditionally assumed that bowels transiently fail to work for several days after abdominal surgery but, with an enhanced recovery intervention, this is not usually the case. Laxatives are useful and encourage patients’ bowels to move. Patients do not need to open their bowels before they are allowed home in some centres.

If a large part of the colon is removed, for example with a total or subtotal colectomy, patients will have no or very little colon remaining. As the colon absorbs a considerable amount of fluid each day, these operations can lead to looser stool consistency and increased bowel frequency. In the immediate post-operative period, the frequency may be more than seven bowel motions in 24 hours. This can make patients feel drained and, potentially, lead to sore perianal skin. Applying a barrier cream can be useful to prevent soreness.

Dietary manipulation may be useful to firm up the stool, by encouraging patients to eat more foods such as carbohydrates. It is important to ensure they take adequate fluids in order to prevent dehydration.

Anti-diarrhoeal medication can be used but should be used with caution in the first few days after surgery.

**CONCLUSION**

Enhanced recovery for colorectal surgery results in optimal post-operative recovery, although problems may occur. Nurses need to be aware of the signs and symptoms of these problems and be able to take action. Early nausea and vomiting may be resolved with anti-emetics or by inserting an NG tube.

A POI might be identified by abdominal pain and distension and failure to pass flatus or faeces. Mobilisation or bowel function can be compromised after surgery but nurses need to be able to care for patients in all these circumstances.

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**REFERENCES**


