GMCA GREATER MANCHESTER COMBINED AUTHORITY

NHS in Greater Manchester

Greater Manchester Cancer

Colo-rectal Pathway Board

Enhanced recovery after surgery (ERAS)

The Manchester Cancer Colorectal Pathway Board recommends to its members the Association of Surgeons Great Britain and Ireland (ASGBI) evidence-based publication "Guidelines for the implementation of ERAS protocols" (http://www.asgbi.org.uk/en/publications/issues_in_professional_practice.cfm). These guidelines are summarised below under the headings of pre-operative, peri-operative and post-operative recommendations.

Pre-operative recommendations

. 1) Pre-operative counselling and training.

. 2) A curtailed fast (6 hours to solids and 2 hours to clear liquids) and pre-operative carbohydrate loading.

. 3) Avoidance of mechanical bowel preparation.

. 4) Deep vein thrombosis prophylaxis using low molecular weight heparin.

. 5) A single dose of prophylactic antibiotics covering both aerobic and anaerobic pathogens.

Peri-operative recommendations

. 1) High (80%) inspired oxygen concentration in the peri-operative period.

. 2) Prevention of hypothermia.

. 3) Goal directed intra-operative fluid therapy.

. 4) Preferable use of short and transverse incisions for open surgery.

. 5) Avoidance of post-operative drains and nasogastric tubes.

. 6) Short duration of epidural analgesia and local blocks.

Post-operative recommendations

. 1) Avoidance of opiates and the use of Paracetamol and non-steroidal anti-inflammatory drugs (NSAIDS).

. 2) Early commencement of post-operative diet.

. 3) Early and structured post-operative mobilisation.

. 4) Administration of restricted amounts of intravenous fluid.

. 5) Regular audit.

Management Guidelines

Preoperative assessment

ERAS begins at the time of patient listing for surgery in the out-patient clinic. The patient is informed about the ERAS program and what they should expect during their treatment pathway. The preoperative assessment is performed by a dedicated team of nurses who provide written information to the patient, arrange stoma counselling through the stoma team if appropriate and give bowel preparation to the patient to take away if they are to be admitted the day of surgery. Any need for postoperative social care at discharge is also identified at this stage.

Bowel Preparation

Mechanical bowel preparation prior to bowel surgery continues to be controversial and surgeons follow regimes they have been familiar with over the years. To achieve a common standard of care in a colorectal unit, surgeons in the unit should aim to agree to a protocol for bowel preparation which can then be made available to preoperative assessment team and the ward staff so as to avoid any confusion. See Appendix 1 for an example of possible bowel preparation choices.

In patients with inflammatory bowel conditions and complex cases, bowel preparation is to be decided at the discretion of the surgical consultant. If in doubt always seek advice.

Postoperative analgesia, fluid management, management of hypotension

See Appendices 2-4 for examples of management. These pathways and protocols should be determined at trust level within the multidisciplinary team.

Post-operative stay on the ward (or High Dependency Unit)

Post operatively the patient may be transferred straight to the ward or to the HDU if appropriate. On both these situations the ERAS protocol needs to be adhered to:

1. Early mobilisation. This includes sitting out of bed on the day of surgery if appropriate and mobilisation with assisted walking post op day 1 onwards. Subsequently patients need to be encouraged to eat at dedicated dining area on the ward if possible.
2. Early resumption of fluid and diet intake, including use of chewing gum.
3. IV fluids to be tailored down rapidly as above
4. Urinary catheter to be removed on day 1 post op.
5. Energy drinks to be taken 3 times a day. Patients to be encouraged to help themselves from the ward fridge.
6. Patient diary. By asking the patients to maintain a daily diary of their activities and setting them a goal for their discharge, is helpful in patients taking ownership of their care.

NB: There will be variation in all the above as per individual patient circumstances and fitness. However, such variations and the reasons need to be mentioned in the integrated care pathway.

Dedicated ERAS facilitator

The Colorectal Pathway Board recommends that every unit practicing ERAS should have a dedicated facilitator. This should be someone distinct from the clinical lead whose responsibility it is to co-ordinate, implement, run, enforce and ensure compliance to the ERAS pathway. They should also be encouraged to collect prospective audit data.

However, it is recognised that due to local funding issues a dedicated ERAS nurse is not always available. It is hoped that most Trusts in the region would have had such a facilitator for at one year or two enabling educations and embedding of the system in day to day practice.

Discharge planning

Discharge planning, a crucial part of effectively reducing length of stay, has been found by many local trusts to be problematic. The Colorectal Pathway Board encourages trusts setting up ERAS programmes to liaise with their local social services to ensure that effective post-operative care in the community should not delay discharge when patients are medically fit.

Audit

In line with the ASGBI recommendations the network believes regular audit is essential to ensure compliance, good practice and promote excellent outcomes. It also recommends participation in regional audit, so that good practice can be shared between units.

Auditing compliance with an individual trust's pathway should be carried out at regular intervals and the information gained fed back to the clinical staff involved in delivery of ERAS. A number of studies have demonstrated that good compliance translates directly into better outcomes and shorter lengths of stay.

APPENDIX 1: Example of possible choices of bowel preparation (Stepping Hill hospital)

Resection Surgery:
Right Sided Colonic Surgery
Clear fluids during 24 hours pre-op
1 x Phosphate enema night before surgery
Left Sided Colonic Surgery
Clear oral fluids during 24 hours pre-op
1 x Sodium Picosulphate Sachet (Picolax/ Citrafleet) BD in 24 hours pre-op
Reversal Surgery
Reversal of Loop Ileostomy
No bowel preparation, Clear oral fluids during 24 hours pre -op
Reversal of Hartmanns
Clear oral fluids during 24 hours pre op
1 x Sodium Picosulphate Sachet (Picolax/ Citrafleet) BD in 24 hours pre-op
1 x Phosphate enema PR night before surgery
Reversal of Sigmoid/Transverse Colostomy
Clear oral fluids during 24 hours pre op
1 x Sodium Picosulphate (Picolax/Citrafleet) BD in 24 hours pre op
1 x Phosphate enema night before surgery

ALL patients with inflammatory bowel conditions and complex cases that have not been listed above, bowel preparation is to be decided at the discretion of the surgical consultant. If in doubt always seek advice.

APPENDIX 2: Example of post-operative analgesia guidelines (Stepping Hill hospital)

Open procedures:
Epidural (if no contraindication) for 3 days. Alternatively, rectus sheath catheters should be used if available avoiding the complications of epidural analgesia.
Regular Paracetamol 1 gram IV/O QDS
Regular Ibuprofen (if no contraindications) from Day 3 post-op: 400 mg TDS + 200mg 8 hourly PRN (max 2400 mg daily). **Ibuprofen should be avoided or used with caution in elderly patients.**
Fentanyl patch (25mcg/hr or 12 mcg/hr for frail patients) to be started on Day 2 of the Epidural at 22.00 hrs. Epidural to be stopped 09.00 hrs Day 3.
Oromorph 2 hourly PRN following removal of epidural (10-20 mg) for breakthrough pain

Laparoscopic procedures:
Consider Fentanyl patch in Anaesthetic Room (25mcg/hr or 12 mcg/hr for frail patients)
TAP blocks + Spinal Diamorphine
Regular Paracetamol: 1 gram IV/O QDS
Regular Ibuprofen (if no contraindications) from Day 1 post-op: 400 mg TDS + 200mg 8 hourly PRN (max 2400 mg daily). **Ibuprofen should be avoided or used with caution in elderly patients.**
Oromorph 2 hourly PRN (10-20 mg) for breakthrough pain.

APPENDIX 3: Example of management of fluids (Stepping Hill Hospital)

1. Preoperative oral hydration up to 2 hrs before induction of anaesthesia with carbohydrate enriched water (Preload).
2. Intra-operatively, goal directed fluid therapy is recommended. Oesophageal Doppler has been used to assess adequate filling. However, it has been suggested that arterial measurements are better particularly for laparoscopic procedures where the pneumoperitoneum can affect oesophageal Doppler measurements.
3. Encourage oral fluids within 2 hours post-surgery and let the patient eat what they want **(VARIANCE– Surgeons instruction/ Patient condition)**
4. Maintenance: 50-100 mmol of Na /day, 40-80 mmol of K / day 1.5-2.5 L of water/day 4.
5. Hypotension / Hypovolaemia should be treated with 200 ml boluses of colloid (Volulyte to be used) titrated against the clinical picture. If the hypotension is considered vasodilatory secondary to an epidural infusion then an iv vasopressor (ephedrine) may be administered following 1 colloid bolus (see Postoperative Hypotension/Epidural Guideline).
6. Additional losses; replace any GI loss (vomit minus drinks) ml for ml with Hartmann's.
7. Urine output is somewhat like an overflow and tells you how well you are doing. The minimum obligatory urine volume is 600 mls/day; this equates to 25 mls of urine/ hour. Do not worry unless the amount starts to fall below this.

Fluid regime for Day 1, 2 etc.
The default is for all patients to achieve the above fluid and electrolyte goals orally. All patients should be reviewed at 10 pm on the day of surgery or if not possible, the following morning. If they are drinking well, the drip should be taken down and the IV cannula kept in-situ for emergency access.
If they are not achieving their oral target, then the IV fluid regime over 24 hours is; 1 L of Hartmann's &1 L of 5% Dextrose + 40 mmol of KCl
IF they drink fluid, reduce the Dextrose accordingly.
Type of IV fluids and K+ supplementation to be adjusted according to patient's U/E's.
NB Many IV drugs (e.g. antibiotics, paracetamol) are given in 100 mls of Normal Saline and this can rapidly mount up. You must add all these together and subtract them from the daily bag of Hartmann's.

APPENDIX 4: Example of management of post-operative hypotension / epidural management (Stepping Hill Hospital)

Hypotension can be defined as either a systolic blood pressure (SBP) < 90mmHg or a > 20% reduction of normal preoperative value.
Always first exclude: Hypovolaemia- consider haemorrhage first, then dehydration. Low Cardiac Output - due to pump failure secondary to severe CCF, arrhythmias, cardiac ischaemia or a combination. Vasodilatation - consider anaphylaxis first but is most commonly an epidural side effect secondary to sympathetic nerve blockade to blood vessels and exacerbated with rapid changes in posture i.e. lying to sitting to standing.
If symptomatic hypotension (i.e. light-headed, dizzy or altered conscious level) it needs immediate treatment:
Lie patient flat down
15l/min O2 via face mask with reservoir bag
200mls Volulyte over 15 minutes (if CCF suspected give 100mls)
REASSESS and exclude other causes of hypotension/shock - if no immediate improvement in symptoms:
call for urgent senior medical help
Stop epidural pump running
Administer vasopressors – i.e. Ephedrine: dilute 30mg ampoule in 10mls 0.9% saline/water for injection
Give 2ml (6mg) bolus. Reassess blood pressure and symptoms every 5 minutes. Repeat bolus if still symptomatic and hypotensive every 5 minutes up to maximum 30mg.
If satisfied that the hypotension has been treated and there is no surgical or cardiac cause restart the epidural at 2/3 the rate
If asymptomatic and the systolic BP is above 80 mmHg:
Return the patient to bed
200mls Volulyte over 15 minutes (if CCF suspected give 100mls)
REASSESS and exclude other causes of hypotension/shock. In some patients with an epidural, particularly young patients or patients with a normally low blood pressure hypotension will be asymptomatic. However careful consideration should be given to these patients before getting them out of bed, particularly for the first time post-op.
If systolic pressure <90mmHg and HR>100 200ml Volulyte to run over 15 minutes, assess for possible causes
If systolic pressure still <90mmHg and otherwise well Ensure that IV access is patent and Give Ephedrine 15mg tablet unless contraindicated. Can begin to mobilise 30 minutes later. **Oral Ephedrine** (15 mg) can be given up to twice daily.
Ephedrine: Its main action is as a vasopressor but it is also used as a bronchodilator.
Contraindications: Known allergy, taking monoamine oxidase inhibitors or have only recently stopped taking them within the last two weeks (e.g.: Moclobemide, Tranylcypromine, Phenelzine, Isocarboxazid, Linezolid).
Side Effects: Nausea, restlessness, insomnia (difficulty sleeping), anxiety, dry mouth, palpitations (more likely in the elderly), trembling, headaches.