Optimising Perioperative Pain Management And Surgical Outcomes

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Background

- Originally pioneered by Professor Henrik Kehlet, Copenhagen, as the Multimodal approach

Evidence-Based Surgical Care and the Evolution of Fast-Track Surgery

_Henrik Kehlet, MD, PhD,* and Douglas W. Wilmore, MD†_

**Conclusion:** Multimodal evidence-based care within the fast-track methodology significantly enhances postoperative recovery and reduces morbidity, and should therefore be more widely adopted. Further improvement is expected by future integration of minimal invasive surgery, pharmacological stress-reduction, and effective multimodal, nonopioid analgesia.

- Became widely popular in Europe
In 2002, NHS Institute for Innovation set up several centres to develop the Enhanced Recovery Programme.
Aims of Enhanced Recovery

• Better outcomes and reduced length of stay

• Increased numbers of patients being treated (if there is demand) or reduced level of resources necessary

• Better staffing environment.
Enhanced Recovery

Improving patient outcomes and speeding up a patient's recovery after surgery

- Pre-op assessment and preparation before admission
- Reducing physical stress of operation
- Post op and peri-op management
- Early mobilisation
Pre-op assessment and preparation before admission

- Attend Pre-op Assessment Clinic on same day of clinic where possible. Patients needing consultant anaesthetist opinion are identified on the same day. Any relevant investigations can be organised in timely fashion. Patients are optimised for their surgery.

- Patient informed of Enhanced Recovery Programme at clinic once decision to operate made.

- Admit on day of surgery.
Reducing physical stress of operation: To bowel prep or not to bowel prep....

Preoperative bowel preparation for patients undergoing elective colorectal surgery: a clinical practice guideline endorsed by the Canadian Society of Colon and Rectal Surgeons

Eskicioglu C¹, Forbes SS, Fenech DS, McLeod RS; Best Practice in General Surgery Committee.

Conclusion: Taking into account the lack of difference in postoperative infectious complication rates when MBP is omitted and the adverse effects of MBP, we believe that, based on the literature, MBP before surgery should be omitted.
NICE: Cochrane Quality and Productivity topics

Mechanical bowel preparation for elective colorectal surgery

Summary
NICE summary of review conclusions
Evidence shows that mechanical bowel preparation is not effective for improving outcomes in patients undergoing elective colorectal surgery and should not be used routinely. It should be reserved for procedures in which intraoperative colonoscopy might be performed or close visualisation of the bowel mucosa is needed.

Stopping or reducing the routine use of mechanical bowel preparation in patients undergoing elective colorectal surgery is likely to lead to improved quality of patient care, improved patient experience and productivity savings. Mechanical bowel preparation should still be used at the surgeon’s discretion during procedures to identify pathology or when intraoperative colonoscopy might be performed.

The ‘Implications for practice’ section of the Cochrane review stated:
‘Prophylactic mechanical bowel preparation prior to colorectal surgery has not been proven to be valuable for patients. This review suggested this should be abandoned. Bowel cleansing should be considered when a surgeon needs to identify pathology – for example, a small tumour – or when an intraoperative colonoscopy might be performed. In rectal surgery, prior to construction of an anastomosis, one of the surgical team can wash out possible bowel contents at the anal site of the anastomosis.’
Complications of bowel preparation:

- Hypovolaemia
- Hypokalaemia
- Hyponatraemia
- Phosphate nephropathy (1:1000)
- Hypocalcaemia
Reducing physical stress of operation

- Reduce duration of fasting reduces the catabolic state. These high CHO drinks are not recommended for women with IDDM and NIDDM.


The role of carbohydrate drinks in preoperative nutrition for elective colorectal surgery

C Jones,1 SA Badger,2 and R Hannon1

- The use of CHO drinks pre-operatively in colorectal surgery is both safe and effective.
- There is no increased risk of aspiration and
- It results in a shorter hospital stay, a quicker return of bowel function and less loss of muscle mass.

On the basis of this evidence, the use of pre-operative CHO drinks should be standard in elective colorectal patients. Further research is nevertheless required for those with diabetes mellitus.
Close Fluid management

Restrictive Fluid Use
- Hypotension
- Increased post-op nausea
- Inadequate Oxygen perfusion
- Impaired tissue oxygenation

Liberal Fluid Use
- Interstitial oedema
- Poor wound healing
- Delayed gastric emptying
- Prolonged resumption in bowel emptying
- Fluid overload → cardiac failure
Hypothermia

**Definition:** core body temperature of less than or equal to 36 degrees Celsius or 96.8 degrees Fahrenheit

Perioperative hypothermia can result in:

- three times the incidence of surgical site infection
- increased bleeding and increased need for blood transfusions
- three times the risk for cardiac complications
- a higher risk for developing pressure ulcers
- prolonged recovery after surgery
Surgeon in OT in UK  Surgeon in OT is Singapore
Peri and post-op analgesia

• Regional block – reduces intraop and immediate post op opiate requirements. (Morphine requirements in the first 24 postoperative hours were also reduced (21.9  8.9 mg vs 80.4  19.2 mg, *P* 0.05) McDonnell J et al The Analgesic Efficacy of Transversus Abdominis Plane Block after Abdominal Surgery : A Prospective Randomised Control Trial. *Anaesthesia and Analgesia*. 2007, V104(1):193-7

• Reduced opiates means less nausea and bowel dysmotility

• NSAID and Paracetamol regularly unless contraindicated (suppositories can be given regularly immediately post op until oral intake tolerated)
Early Re-feeding

• Traditional practice is to keep patients with bowel anastomotic surgery with NG tube nil by mouth is not based on evidence based practice

• Free fluids immediately post op. Light diet Day1
Early mobilisation

- Patients are encouraged to sit in a chair or mobilise on the day of surgery

- Mobilisation on Day 1.

- Glycerin supp Day 2 to encourage bowel activity

- Remove all drains and catheters as early as possible
Practical Aspects

- Staff training and learning
- Improved processes
- Procedure specific care plans
- Change of mindset: patient, doctors, care givers
How

- Multidisciplinary team
- Education – staff, patients, mindsets
- Map patient journey - identify needs
- Implementation
- Audit – identify problems, patient satisfaction
- Readmission rate- how to prevent
SGH Gynaecology Experience
Discharge within 7 days post OP

**Indicators**

<table>
<thead>
<tr>
<th>Numerator</th>
<th>Denominator</th>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>All major Gynaecological cases with LOS ≤ 7 days</td>
<td>All Major Gynaecological cases</td>
<td>All Gynaecological cases matching operation codes for major cases</td>
<td></td>
<td>All surgery cases done in SGH</td>
</tr>
</tbody>
</table>

*Median = 92.31%*
How

- Laparoscopic Surgery where possible
- The team is encouraged to adopt a different mind-set in managing patients in the pre – and post-operative period
- Patients are encouraged to adopt this pro-active mind-set, from the moment they agree to the surgery.
- Patients are given pre-op high carbohydrate load drinks
- Anaesthetists to use a different regime of anaesthetic/analgesics, involving less opiates.
- Early establishment of oral intake and mobilisation
- Discharge when patients are ready.
Measures

- Length of stay
- Patient satisfaction
Discharged within 4 days post op

Median = 65.22%
Early mobilisation and re-feeding

Many patients in this period has combine operations had longer hospital stay.

Median = 80.0%
Length of stay - baseline

Median = 65.22%

Many patients in this period have undergone operations requiring longer hospital stays. Median = 80.0%
Introduction of regular non-opiate analgesics

Many patients in this period have undergone operations and had longer hospital stays.

Median = 80.0%

Median = 84.9%

PDSA1 (Data collection)

PDSA2 (15/04/13) PR analgesia
Introduction of Pre-op drinks

Many patients in this period have undergone operations that had a longer hospital stay.

Median = 80.0%

PDSA1 (Data collection)

PDSA2 (15/04/13) PR analgesia

Median = 84.9%

Pre Op glucose

Median 86.2%
<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>no</th>
<th>Laparotomy</th>
<th>Laparoscopy</th>
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<tbody>
<tr>
<td>Abscess</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Advanced rectal ca</td>
<td>6</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Ovary (borderline /benign)</td>
<td>6</td>
<td>5</td>
<td>1</td>
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<tr>
<td>Cervical/vaginal cancer?AIS</td>
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<td>10</td>
<td>2</td>
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<tr>
<td>Endometrial cancer</td>
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<td>16</td>
<td>12</td>
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<tr>
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<td>5</td>
<td>1</td>
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<tr>
<td>Fibroid</td>
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<td>IDS (ovary ca)</td>
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<tr>
<td>Krukenberg</td>
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<tr>
<td>Ovary /fallopian tube ca</td>
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<td>Peritoneal ca</td>
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<td>Sarcoma</td>
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<td>Discharged on Post op day</td>
<td>Laparoscopy</td>
<td>Laparotomy</td>
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<tr>
<td>7</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>&gt;7</td>
<td></td>
<td>22 + 2 (died)</td>
<td></td>
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</table>

LOS \( \leq 4 = \frac{64}{118} = 54\% \)
Patient Satisfaction
(Telephone exercise by Service Quality Staff)

- Two hundred and seventy two phone calls were made, of which they were not able to contact 39 of the patients (2 of whom had returned to their own country).

- 3 main questions:
  - If they felt their post op analgesia was sufficient
  - If they felt that their hospital stay was the correct length
  - If they were satisfied with their care – pre-op counselling and hospital stay
If they felt their post op analgesia was sufficient

<table>
<thead>
<tr>
<th>Post Op pain relief</th>
<th>Yes</th>
<th>No</th>
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<tr>
<td>Pain well controlled</td>
<td>219</td>
<td>14</td>
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<tr>
<td>Enough pain medication</td>
<td>231</td>
<td>2</td>
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If they felt that their hospital stay was the correct length

<table>
<thead>
<tr>
<th>Length of Stay</th>
<th>No. patients</th>
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<tbody>
<tr>
<td>Too Short</td>
<td>8</td>
</tr>
<tr>
<td>Just Right</td>
<td>169</td>
</tr>
<tr>
<td>Too Long</td>
<td>13</td>
</tr>
<tr>
<td>No comments</td>
<td>43</td>
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If they were satisfied with their care – pre-op counselling and hospital stay

<table>
<thead>
<tr>
<th>Satisfied with hospital care</th>
<th>No. Patients</th>
</tr>
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<tr>
<td>Satisfactory</td>
<td>9</td>
</tr>
<tr>
<td>Good or very good</td>
<td>213</td>
</tr>
<tr>
<td>No comments</td>
<td>1</td>
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</table>
So I ask you:

*Would you rather look like this*
Or this

..........
Thank you very much for listening......