Fast-Track: Perioperative Care after Colorectal Surgery in Senior Patients

The concept of multimodal perioperative care (fast-track surgery or enhanced recovery programmes) aims to reduce perioperative surgical stress after colorectal surgery resulting in lower morbidity and enhanced recovery.1-5

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It was initially developed by H. Kehlet et al in the 1990s. The main evidence-based 6-7 elements of fast-track (FT) programmes are listed in Table 1. FT led to significant decrease in postoperative morbidity (10-20% vs. 25-35% with standard care) and reduce length of hospital stay (LOS) from 8-12 to 3-4 days, without increase in readmission rate.30-32 Recently, many randomized trials, meta-analyses and systematic reviews have confirmed its safety and efficacy in reducing morbidity and LOS, but also by improving patient satisfaction as compared to standard care.18,19,33,37

Current progress in perioperative care have focused on perioperative fluid management, while accumulating evidence through randomised trials has demonstrated the importance of balanced fluid reanimation (by individualized i.v. fluids therapy) which significantly decrease morbidity (cardiopulmonary & thromboembolic complications) and reduce postoperative ileus and LOS.29-35,38

Metabolic stress and insulin resistance following major surgery results in postoperative hyperglycaemia which is associated with increased morbidity and mortality. In non-diabetic patients, avoiding preoperative fastening using oral carbohydrate (CHO) loading until 2-3 hours before surgery substantially reduces postoperative stress and insulin resistance, resulting in a decreased risk of hyperglycaemia postoperatively.11,34-36 Commercially available CHO-rich (12.5%) solutions contains small carbohydrate polymers to minimize the osmotic load and reducing gastric emptying time. In addition to its metabolic effect, preoperative CHO load improves patient well-being.40-41 Moreover, type 2 diabetic patients showed no signs of increasing glucose peak or delayed gastric emptying; suggesting that a CHO drink may be safely administrated 2-3h before anaesthesia without risk of hyperglycaemia or preoperative aspiration.40-42

Evolutions of Fast-Track concept

Although FT surgery has been shown to improve postoperative recovery after colorectal surgery, universal implementation has not yet occurred. Some reasons are that FT programs are often complex; resource demanding and possibly elusive because of the relative contribution of each intervention remains uncertain.43-46 A recent prospective study assessed the influence of FT components and protocol compliance on clinical outcomes (morbidity, LOS, postoperative symptoms directly responsible for delayed LOS) after colorectal procedures. Adherence to FT protocol increase from 43 to 71% after 1 to 3 years with a significant reduction in postoperative complications.46-48 More interesting is that perioperative i.v fluids restriction and CHO administration were the two only major independent predictors. For each additional intravenous litre given during day of surgery, postoperative symptoms delaying recovery were increased by 16% and morbidity by 32% (in particular cardio-respiratory complications). In patients receiving CHO load, postoperative symptoms were reduced by 44%, in particular postoperative nausea and vomiting, pain, diarrhoea, and dizziness. Wound dehiscence was also reduced by CHO administration.43

Prevalence of malnutrition concern up to 35% of colorectal patients and was identified as an independent factor that directly influences postoperative morbidity and mortality.47-48 According to the NRS-2002, (recommended screening by ESPEN: European Society of Parenteral and Enteral Nutrition), nutritional support should be used to initiate 7 days before surgery in every patient at nutritional risk. (NRS : 3, >70 years old or cancer)

The use of thoracic epidural analgesia (TEA) has been recommended as one of the key element of fast-track surgery.14-17,20-24 Recently, others techniques such as abdominal wall block49-50, surgical wound infiltration of local anaesthetics51-52 or continuous intravenous lidocaïne infusion17,53 have been assessed with promising results but deserve further investigations to be proposed as a safe alternative for pain control in a FT program.16-18

Fast-Track Surgery in senior patients

With improving life expectancy and baby boomers (born in 1946-1964) entering in their retirement age, senior population (>70 years) represent one of the most rapidly growing parts of Western countries (12-18%) and is attending to double in the next two decades. Moreover, seniors have a high incidence of colorectal pathology and already account for 2/3 of all solids cancers of which 50% are colorectal cancers54. More and more surgeries will therefore be performed in these frail patients. Colorectal surgery in senior patients is frequently associated with higher postoperative morbidity (10%-43%) and mortality (2.5%-11%) rates than in their younger counterparts, primarily due to their pre-existing comorbid conditions and reduced functional reserve. They also typically experience a prolonged hospital stay (10-15 days), often require an extended-care or specialized nursing facility at discharge and are at greater risk for loss of independence after surgery with traditional care.25-28

Only scarce information29-32 is currently available on fast-track perioperative care in senior patients, as reported in Table 2. These early studies using multimodal rehabilitation reveal therefore encouraging results with significant reduction in postoperative morbidity (5 to 28%) resulting in a shorter hospital stay (3 to 8 days).
As the benefits of faster recovery may be still more pronounced in senior patients, a dedicated fast-track perioperative care program was recently initiated after colorectal surgery in senior patients. This prospective randomized trial was approved by the Geneva University Hospital Ethical Committee and is currently ongoing with 102 seniors included so far (registration number NCT 01646190). The aim of this RCT is to evaluate feasibility of a dedicated senior fast-track program as compared to current standard care after elective colorectal surgery. It will be particularly focused on implementing highest evidence on oral nutrition, individualized optimization of fluid management, analgesic regimen and physical rehabilitation.

Table 2: Background data of fast-track programs evaluation in senior patients

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design*, (MIS/open)</th>
<th>N</th>
<th>Age med</th>
<th>Morbidity (%)</th>
<th>Mortality (%)</th>
<th>LOS (d)</th>
<th>Read (%)</th>
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<td>DiFronzo60</td>
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*Design: PC: prospective cohort; RC retrospective cohort; RCT: randomized controlled trial

Summary

Fast-track surgery is a multimodal, multidisciplinary-team approach to reduce perioperative surgical stress after colorectal surgery, resulting in lower morbidity and enhanced recovery. As fast-track seems to be the most beneficial in senior patients (>70 years), only scarce information is available in this population. Therefore a randomized controlled trial was initiated in our institution comparing a senior dedicated fast-track approach to modern standard care after colorectal surgery.