Leading article

The future of fast-track surgery

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Since its introduction in the 1990s, the concept of multimodal perioperative care (fast-track surgery, enhanced recovery programmes) has gained widespread acceptance and is now considered as a standard of care. Most studies that support this approach relate to colorectal surgery, but similar data have been published across surgical specialties with major economic benefits[1–4]. The implementation process has been described in detail and is essentially based on the simple question: 'Why is the postoperative patient in hospital today?'[1,5].

The relevant question may therefore be asked – what next? Postoperative length of stay is often seen as the key outcome for fast-track surgery and, although this may not always be appropriate, whatever is used as a primary outcome measure must be justified adequately. It should also be emphasized that significant progress in fast-track care demands inclusion and implementation of all of its basic components. Many studies have not implemented the most important aspects of the care programmes that were originally described, including patient information, effective thoracic epidural analgesia with sufficient local anaesthetic that facilitates early mobilization, reduced ileus and rapid reintroduction of oral feeding, or the use of non-opioid analgesia, where appropriate, in open or minimally invasive surgery.

An important issue that needs to be addressed in future is detailed analysis of 'medical' *versus* 'surgical' morbidity[6]. To improve further our understanding of perioperative risk, future studies must analyse how one specific complication might lead to another: for instance, whether a pneumonia or myocardial infarction led to an anastomotic dehiscence; or a wound dehiscence with reoperation led to a subsequent pneumonia, myocardial infarction or thromboembolic complication[6]. Initial 'medical' morbidity may depend on perioperative care principles and pre-existing comorbidity, in contrast to an initial 'surgical' complication, which may depend on surgical technique, and therefore require a different approach from fast-track methodology.

How might the fast-track approach evolve further, as surgeons perform an ever-increasing number of major procedures in older patients with comorbidities, with greater risks of postoperative complications, prolonged hospital stay and death[6]? Preoperative evaluation of operative risk may not be helpful unless evidence-based perioperative interventions are available and instituted. Thus, the specific role of preoperative morbidity, such as smoking, diabetes and cardiopulmonary disease, in determining the risk of postoperative morbidity needs to be reassessed in studies with a fully implemented fast-track procedure-specific programme[6]. We also need to have a second look at the relative roles of the different components of the fast-track programme (for example type of analgesia and fluid management[1,5]) and analyse where progress can be made in order to reduce perioperative risk and morbidity, instead of focusing on length of stay as the primary outcome.

The surgical stress response is proportional to the degree of insult and the main factor that contributes to postoperative organ dysfunction[1,2]. Every effort should therefore be made to reduce those responses that are undesirable. Regional anaesthetic techniques have a powerful effect on the catabolic response, reducing cardiac demands, pain, pulmonary dysfunction and ileus. Regional anaesthesia should be used whenever possible on a procedure-specific basis[7]. Inflammatory responses contribute to pain, fatigue and organ dysfunction. They can be modified pharmacologically by preoperative glucocorticoids[8]. Significant reductions in pain, nausea and vomiting, and early fatigue have been demonstrated, facilitating early recovery, so far without demonstrable side-effects. More procedure-specific and dose-finding studies are required. A single preoperative glucocorticoid dose in a larger amount than used for conventional nausea and vomiting prophylaxis might, for instance, be an important contributory factor to improving fast-track programmes in high-risk patients.

Minimally invasive surgery also reduces the inflammatory response, although the contribution that this plays in the context of fast-track programmes in colonic surgery is difficult to interpret, as the care programmes used in the 'open' groups have often not been fully implemented[6,9,10]. Therefore, future efforts to assess early postoperative outcome effects of minimally invasive surgery should include randomized studies with fully implemented fast-track programmes[11]. Newer developments in minimally invasive surgery

such as natural orifice transluminal endoscopic surgery and single-incision laparoscopic surgery run the same risk of improper assessment when no incorporation of evidence-based fast-track methodology has been made, thereby repeating previous mistakes when other minimally invasive procedures were developed[2,6,9,12].

In conventional care programmes, evidence-based recommendations for thromboprophylaxis include prolonged therapy (2–4 weeks), but these recommendations are based on studies with a long hospital stay. New data are needed to determine whether such prolonged prophylaxis is necessary in fast-track surgery, where early mobilization is instituted[13].

Perioperative fluid management is important to improve outcome, especially by avoiding fluid excess. Goal-directed fluid management has been shown in randomized trials, predominantly in major abdominal surgery, to reduce surgical morbidity[14]. Most of these studies, however, did not include other care principles within the fast-track terminology[14] and more studies are needed, particularly in high-risk patients[6]. Adequate postoperative analgesia allowing early mobilization is a prerequisite and cornerstone in fast-track surgery[1,6].

The principles and future developments have been outlined with an emphasis on balanced analgesia, that is a combination of non-opioid analgesics and no or limited use of opioids to enhance recovery[15]. Unfortunately, these principles have often not been applied, calling for increased attention to analgesia with a focus on regional anaesthetic techniques[7].

Our understanding of perioperative pathophysiology has improved in the past 10 years and, with the development of evidence-based care principles, surgical techniques and organizational issues (specialization), has contributed to reduced morbidity and length of hospital stay. Increasing demands for major surgery in high-risk patients call for further improvement, which should include a procedure-specific, evidence-based, updated and multidisciplinary approach within the fast-track methodology[6]. The future is promising, but will require increased collaboration between surgeons, anaesthetists, nurses and physiotherapists in order to make progress[1].

Disclosure

The authors declare no conflict of interest.

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