Is fast track rehabilitation already standard in gastrointestinal surgery?

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Fast track rehabilitation in colorectal surgery developed and introduced by Kehlet et al. during the mid-1990s changed the strategy of perioperative treatment breaking with a lot of dogmas like preoperative fasting and bowel preparation [1, 2]. The aim of this novel strategy was to reduce surgical stress response, minimize the fasting period, and the time of immobilization of the patient. As a consequence, early restoration of bowel function and reduced perioperative morbidity allowed early discharge from hospital [3]. Initially this was postulated as one of the most important goals of the program. Subsequently “ERAS” (Enhanced Recovery after Surgery) replaced the term “Fast track” to refer the aim of the program to early recovery and reduced perioperative complications [4].

Fast track as a synonym for modern perioperative treatment was discussed in the majority of surgical congresses. Asking surgical colleagues if they do fast track at their department resulted frequently in agreement. So we could easily presume that fast track is already standard in the majority of surgical wards. But discussing the details of the fast track recovery program, listening to presentations of fast track experiences or analyzing recent papers published on this issue, you can recognize, that there are no clear definitions about the essential elements to fulfill for the definition of a fast track recovery program and on the other hand the degree of fulfillment remains unsatisfactory. Moreover different institutions seem to have their own interpretation of fast track by changing or selecting elements of the fast track protocol [5, 6].

For example, in a publication of Quan Wang et al. about the effect of fast track surgery in laparoscopic colorectal surgery in patients >65 years the authors tell

us: The fast track protocol included no preoperative mechanical bowel irrigation [7]. Nevertheless in methods the authors describe their method of bowel preparation as: “Oral administration of 2 bags of polyethylene glycol-electrolyte powder dissolved in 2000 ml of warm boiled water one day before surgery; No administration of intestinal antibiotics; No mechanical bowel irrigation.” This would be the standard bowel preparation done in conventional perioperative treatment at our department. Oral selective bowel decontamination with antibiotics and additional enemas as applied in their conventional group is rarely applied in conventional preoperative care for elective colorectal surgery in European hospitals. But this paper was published as a fast track trial and is integrated in a meta-analysis [8].

In order to establish essential elements the question was raised: Which components have been proven to have a positive effect on the rehabilitation of the patients? M.S. Vlug et al. addressed their study to this question analyzing the LAFA-trial database [9]. The examined 19 fast track elements in regard to correct application and therefore analyzed their influence on the primary outcome parameters, which was the length of hospital stay in this study. Their general conclusion was: “Evaluating only those fast track elements that were successfully achieved, enforced advancement of oral intake, early mobilization, laparoscopic surgery and female sex were independent determinants of early recovery.” So they could not identify an effect of some “essential” elements as bowel preparation, preoperative carbo-loading, epidural analgesia, or intraoperative fluid restriction. A total of 19 elements of ERAS were reviewed for their level of evidence by Kristoffer Lassen in Archives of Surgery 2009 and Gustafsson reported an update of evidence in ERAS from a consensus meeting of the ERAS Society 2013 [10, 11].

On the other hand, Hasenberg et al. published a survey asking all Austrian and German surgical departments about the current practice of perioperative management

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in colonic and rectal surgery [12]. The response rate was low with 30 % in Germany and acceptable with 67 % in Austria. Interestingly, one of the most negated evidence in surgical literature was the data about preoperative bowel preparation. Although, no benefit of preoperative bowel preparation has been proven in several randomized multicenter trials with large patient populations and in a meta-analysis, more than 60 % of surgeons still prefer to prepare their patients. This corresponds to an evaluation of the compliance with elements of the fast track protocol in our department published in this issue. Especially in laparoscopic surgery, surgeons argue that laparoscopic handling of stool-filled bowel leads to a higher risk of rupture. In left-sided resections transanal stapling requires an empty rectum. To our opinion this can be reached by an enema the evening and 2 h before surgery. Nevertheless, only 20 % of surgeons in Austria and 10 % of surgeons in Germany relied on this form of bowel preparation. Furthermore, the development of new methods in minimal invasive surgery with extraction of the resected bowel through minimal incisions or even transanal could be complicated by a stool-filled bowel. Until now no significant benefit of new minimal invasive approaches (single incision laparoscopic surgery or reduced port surgery) over “conventional” laparoscopy has been demonstrated in randomized trials [13–15].

On the other hand the spread of the fast track protocol has changed many items in perioperative care without establishing a real protocol [16]. So most of the surgeons are reducing the insertion of drains and allow their patients at least oral intake of clear liquids postoperatively. Early mobilization out of bed is already standard.

In regard to preoperative oral nutrition even in published fast track trials oral intake is often limited to liquids with the goal to avoid i.v. fluid administration. Starving overnight is nearly extinguished and carbo-loading with up to 500 ml 2–3 h before surgery is well accepted by the surgeons and nearly all anesthetists. Guidelines of anesthetists societies already changed their recommendations for preoperative fasting [17].

In regard to epidural anesthesia the compliance by the patients and anesthetists, and the quality of the procedure is mandatory. The reported rate of successful, applied and over a period of 24 h functioning epidural anesthesia is low [18–22]. On the other hand even promoters of Fast Track recovery programs are questioning the need and cost/risk benefit of epidural anesthesia in laparoscopic surgery [23]. Moreover in laparoscopic surgery strategies to minimize the size or number of ports and to avoid the mini-laparotomy for the extraction of the specimen are published. Local infiltration with long acting local anesthesia or even retarded releasing of subcutaneously applied local anesthesia could achieve sufficient pain control as described in the later published data of a retrospective analysis. As mentioned above, epidural anesthesia had no impact on early discharge in the data from the LAFA trial [9]. Even in conventional colonic resection a transverse abdominal block is suggested instead of a thoracic epidural anesthesia [23, 24].

Failure to demonstrate an effect on faster recovery also was seen for intraoperative fluid restriction and still is questioned by many anesthesiologists. A study by M. Abraham-Nordling et al., showed no effect on early discharge but observed a higher rate on postoperative complications, especially major surgical complications as anastomotic leakage, in the group of normal fluid administration [25]. On the other hand 2 patients out of 79 suffered from postoperative renal dysfunction and 5 patients out of 79 experienced cardiac complications in the group of restricted fluid administration. Unfortunately, many published fast track trials do not give exact information about the amount and quality of intraoperative applied liquids. Moreover, a recent meta-analysis could not demonstrate a benefit of goal-directed fluid management by trans-esophageal Doppler echocardiography to conventional fluid therapy [26]. In a retrospective analysis of our patients, published below, we could not demonstrate an effect on postoperative bowel movement, tolerance of oral food and early discharge, but observed a higher rate of intraoperative bleeding in the group of patients with higher administration of intraoperative intravenous fluids.

Early mobilization of the patient seems to be accepted in a modified manner as mobilization on the day of surgery is not done routinely and a strict order to stay out of bed except for 2 h at midday as proposed by Kehlet is rarely accepted by patients and nursing staff. Maybe due to a lack of documentation or low rate of compliance this element is not investigated in detail. What is the real goal of fast track rehabilitation? Forced discharge on day 2 as proposed by Kehlet in the first studies is influenced by economic considerations. In many European countries early discharge is not compensated financially [27]. Therefore, it does not make sense to force early discharge of patients as nursing capacities are historically calculated on a mix of early postoperative patients with intensive nurse care and patients recovering from surgery more than 5 days ago with less workload for the nursing staff. So a fast track protocol with forced discharge 2 days after surgery will reduce financial compensation and augmenting the workload for the nursing staff. Moreover, compliance of the patients and their relatives with enforced early discharge is questioned and the fear for claims in case of complications and readmissions is raised in some discussions and level of evidence for early discharge is C [22].

Nevertheless, the important advantages of fast track recovery is the reduction of complications, improvement of quality of life, and early recovery of the patient. Fast track research could demonstrate that many perioperative procedures such as fasting or bowel preparation are useless and can safely be omitted and protocols can be adapted in different surgical procedures [8]. So ERAS protocols have been established for various gastrointestinal resections, for example, for the resection of the esophagus as published below [28, 29].

Conclusion

Fast track surgery programs have changed many perioperative procedures in daily praxis of gastrointestinal surgery, but some elements despite of scientific literature are persistently neglected by many surgeons and others like epidural anesthesia are replaced. In order to establish fast track recovery already as standard procedure, definition of essential elements to fulfill, exact definition of some of these elements, and adaptation to less invasive laparoscopic techniques require further investigation [27].

Conflict of interest

The author declares that there is no conflict of interest.

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