

Is enhanced recovery after anesthesia a synonym to enhanced recovery after surgery?

Recently, there have been many published articles on implementing the enhanced recovery after surgery (ERAS) (www.erassociety.org) protocols with special reference to gastrointestinal surgery.^[1,2] ERAS is a clinical pathway proposed to improve the outcome and to speed the recovery process after surgery.^[3] In implementing enhanced recovery after bariatric surgery (ERABS) protocol, it was found that the use of ERABS ensured the highest safety standards.^[3,4] ERAS guidelines for the postoperative management were successfully implemented in gynecologic/oncology surgery.^[5] Looking in depth to the ERAS protocols, you will find that anesthesia plays an important role in many aspects of ERAS, including patient education, preoperative evaluation and optimization, anesthesia choice and medication, fluid therapy, temperature monitoring, and postoperative analgesia. Therefore, the term enhanced recovery after anesthesia (ERAA) accurately describes ERAS protocols. We have designed the ERAA ladder which summarizes all aspects of ERAS protocols including the background, preoperative, intraoperative as well as postoperative management [Figure 1]. Briefly, if you look into the background section, you will find the most important three pillars of the protocol including the risk assessment, optimization of preexisting organ function, and education. Furthermore, a brief note is given insulin resistance in terms of long fasting hours and the trend nowadays of giving preoperative carbohydrates to reduce surgical stress. In the preoperative section, you will find the most important risk stratification tools commonly used in clinical practice with strong recommendation grade. Of note the Lee index which grades the patient as high risk if he/she has a history of ischemic heart disease and or cerebrovascular disease, heart failure, diabetes mellitus who is undergoing high-risk surgery with a creatinine level >177 mmol/l. Smoking cessation for at least 4 weeks

before surgery is highly recommended. In the intraoperative box, standard anesthetic protocol should be adhered with where the anesthetic depth guided with bispectral index monitoring between 40 and 60 to prevent awareness and to minimize anesthetic side effects with rapid recovery. The standard anesthetic protocol is strongly recommended in the ERAS protocol. Neuromuscular transmission monitoring and reversal of neuromuscular blockade are strongly recommended. We believe that sugammadex which is specific reversal agent for rocuronium has ensured the adequate return of muscle function and nearly eliminates the problem of residual paralysis during the recovery period. Looking into the postoperative box, you will find opioid sparing techniques including regional techniques are strongly recommended as multimodal analgesia strategy for open and laparoscopic abdominal surgical procedures. Thoracic epidural analgesia is strongly recommended in open and weakly recommended in laparoscopic abdominal surgery. Intravenous lidocaine infusion is moderately recommended for both surgical techniques.^[6] Continuous wound infiltration of local anesthetic is weekly recommended in open abdominal surgery technique.^[7] Transversus abdominis plane block is strongly recommended in laparoscopic abdominal surgery.^[8] In addition, in the postoperative box, you will find the measurements to prevent and avoid postoperative delirium which includes avoidance of long fasting hours, deep anesthesia, and use of benzodiazepines.

We believe that the ERAA ladder summarizes all aspects presented in the ERAS protocol and gives the practicing anesthesiologist the most important aspects, belong to our specialty, to be implemented in an easy way to achieve at the end better outcome for our patients. Though the protocol is almost all implemented in our

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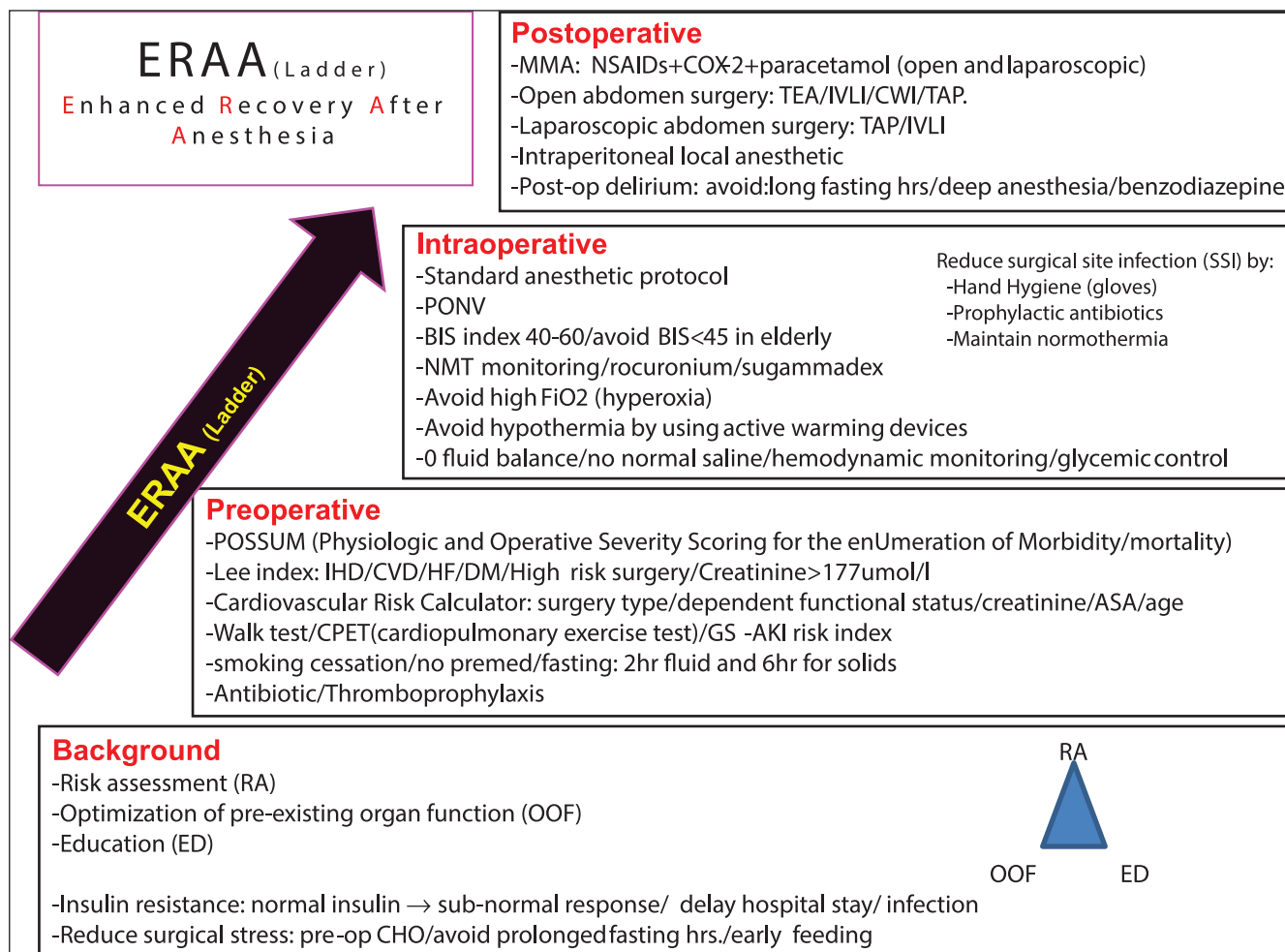


Figure 1: Enhanced recovery after anesthesia (ladder)

setting; however, a structured validation of it is becoming a necessity.

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