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The Current and Future Role of Regional Anesthesia in Enhanced Recovery After Surgery Programs for Abdominal Surgery

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Keywords

• Regional anesthesia • Abdominal • Surgery • Laparoscopic surgery • Laparotomy

Key points

- Improvement of surgical care and implementation of enhanced recovery after surgery (ERAS) programs might have reduced the previously described analgesic and nonanalgesic benefits of different regional anesthesia techniques.
- Regional anesthesia within the context of multimodal analgesic (MMA) regimen improves postoperative analgesia and minimizes opioid consumption and their related side effects. Opioid-related side effects are dose dependent and hinder recovery.
- Thoracic epidural analgesia (TEA) has been shown to attenuate the stress response induced by surgery and to improve gastrointestinal recovery, while decreasing cardiopulmonary complications in major abdominal (open) surgery. However, it remains unclear if the previously demonstrated benefits of TEA can be reproduced in the context of current and future ERAS programs. Alternative analgesic techniques to TEA for patients undergoing open abdominal surgery include continuous intravenous lidocaine (IVL) infusion, transversus abdominis plane (TAP) blocks, and preperitoneal continuous infusion of local anesthetic.
- For patients undergoing laparoscopic surgery, intrathecal (IT) analgesia with IT morphine, continuous IVL infusion, TAP blocks, and intraperitoneal local anesthetic (IPLA) are efficient and safe analgesic techniques commonly used in the context of an ERAS program.
- The evidence supporting the use of regional anesthesia to improve short and long-term nonanalgesic outcomes in the context of an ERAS program requires further investigation. It remains unclear if regional anesthesia techniques affect cancer outcomes.

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INTRODUCTION

In the past 2 decades, there have been major advances in regional anesthesia as a result of improved training and better technology, thus allowing regional anesthesia to become a more integrated technique of clinical anesthesia. There is general acceptance that the quality of postoperative analgesia achieved with different regional anesthesia techniques is superior to that achieved with any other nonregional techniques, and for this reason, regional anesthesia is very much in demand for different types of surgery. Epidural analgesia is the most studied regional anesthesia technique with regard to postoperative outcomes in patients undergoing abdominal surgery.

The beneficial effect of epidural analgesia on clinical outcomes as conventionally evaluated, such as mortality, morbidity, and length of hospital stay remains controversial, especially when used within the context of ERAS program.

In the past 20 years, there has been a growing interest in the ERAS programs that incorporate evidenced-based interventions with the intent to minimize surgical stress, reduce morbidity, decrease variability in perioperative care, and thereby facilitate earlier hospital discharge [1]. A major goal in the development and implementation of the ERAS program is to understand and address the factors that keep patients hospitalized after major surgery and impede their return to baseline performance and function. The evidence for their benefits in decreasing length of stay and complications has been shown to be strongest in colorectal surgery [2], but there is emerging evidence in other areas of abdominal surgery suggesting that accelerated recovery concepts are generalizable across a wide range of procedures. While most of these studies have reported traditional outcome measures such as length of hospital stay and complications, very few studies have investigated the impact of these programs on patient-centered outcomes as the primary measure. This article reviews the indications and advantages of various regional anesthesia techniques for abdominal surgery in an ERAS program. An update is also provided on the application of regional anesthesia techniques for abdominal surgery procedures. Considerations are made relative to the surgical advances in technology (robotic) and clinical practice. The literature search for this article is based on clinical works published in the past 15 years and identified using Medline and the Cochrane Library.

THE ENHANCED ROLE OF REGIONAL ANESTHESIA

There is a recognition that regional anesthesia techniques, and in particular neuraxial afferent blockade, have been shown to be associated with several recognized physiologic and clinical advantages, such as modulation of surgical stress response, improved microcirculation and tissue perfusion, decreased insulin resistance, less inhibition of diaphragmatic activity, and optimal pain relief [3,4]. These potentially beneficial effects provide the necessary conditions to facilitate the introduction of enhanced recovery pathways (ERPs). Clearly, one has to understand that these anesthetic and analgesic techniques cannot, in isolation, affect surgical outcome, but they need to capitalize on the multidisciplinary aspects of the ERAS programs to facilitate the recovery process. For