



## Editorial

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# Multimodal analgesia or balanced analgesia: the better choice?

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The concept of balanced anesthesia was introduced by John S. Lundy in 1926 [1]. He suggested that a balanced application of different agents and techniques could produce the different components of anesthesia such as amnesia, analgesia, motor paralysis, and abolition of autonomic reflexes. Induction of anesthesia with a single agent alone can cause several complications. On the other hand, using a combination of more than one anesthetic drugs and techniques can improve patient safety, reduce the side effects of anesthesia, and increase patient satisfaction [2].

Almost everyone suffers from postoperative pain, whether mild or severe. Postoperative pain, along with nausea and vomiting, is the most common complication after surgery, but satisfactory management has not been achieved. Nearly 86% of patients undergoing surgery reported postoperative pain in USA [3], and 11% and 37% of patients reported severe and moderate pain, respectively, in the first 24 hours in UK [4]. Patients' desire for postoperative pain control has increased in recent times; hence, it has become an important issue for anesthesiologists. Therefore, methods to achieve satisfactory analgesia in patients while minimizing side effects are being devised. Poorly controlled pain is associated with several negative consequences for the patient, including delayed discharge, delayed recovery of organ function, and increased risk of persistent post-surgical pain [5,6]. The goal of well-controlled pain management is more likely to have superior functional outcomes and quicker return to daily living activities.

Kehlet and Dahl [7] described multimodal analgesia (MMA) in 1993. They recommended combined analgesic regimens (balanced analgesia) or multimodal approach to treat postoperative pain. MMA uses a combination of analgesic drugs from different classes along with analgesic techniques targeting different pain mechanisms. The nerve block technique is a key element of MMA. Peripheral nerve blocks have been used in upper and lower extremity surgeries as important anesthetic techniques previously. The recent expansion of the number and types of nerve block approaches poses a great challenge for anesthesiologists. We need to know which regional anesthetic technique is the best, and what skills and anatomical knowledge will be needed to implement it. Fortunately, advances in technology and the accumulation of anatomical knowledge are solving these problems. The development in ultrasound-guided techniques and the equipment advances have opened a new horizon in regional anesthesia.

A proper regional blockade helps to maintain and restore organ functions, including pulmonary function. Lim et al. [8] described respiratory and analgesic effects of interscalene block (ISB), anterior suprascapular nerve block (SSB), and posterior SSB in arthroscopic shoulder surgeries. In their study, the ISB group showed a 31.2% reduction of forced vital capacity, while the anterior and posterior SSB groups showed significantly lower reductions of 3.6% and 6.8%, respectively. The diaphragmatic excursion in the ISB group decreased more than that of the anterior and posterior SSB groups. Therefore, they concluded that the anterior SSB preserved the pulmonary function better than ISB did.

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The paravertebral block is an effective regional anesthetic technique providing significant analgesia in numerous surgical procedures [9]. Furthermore, various types of thoracic wall blocks and plane blocks are used in many surgeries. Recently, the adductor canal block for total knee arthroplasty, erector spinae plane block or Pec II for breast surgery, serratus anterior plane block for thoracic surgery, etc. have been widely used [10]. The neural blocks have been newly developed and are being used in clinical practice. The subcoracoid tunnel block, an alternative to the infraclavicular brachial plexus block, has been newly mentioned for below-elbow surgeries [11]. These blocks have been based on proper anatomic knowledge and adequate technique development.

The pharmacological method of pain management is another essential part of MMA. Combinations of different drug classes that target different mechanisms of action, possibly resulting in synergistic analgesic effect, are usually used. Local anesthetics, opioids, non-steroidal anti-inflammatory drugs, acetaminophen, and alpha-2 agonists are the most commonly combined medication groups. Topical analgesics are good alternatives for pain management, exhibiting many potential benefits such as ease of use, low risk of systemic adverse effects, and lesser drug-drug interactions as compared to oral/intravenous medications [12].

The goal of balanced analgesia is pursuing MMA management that can provide each patient with optimized and sufficient analgesia while minimizing side effects of the drugs or procedures by using multiple drugs and the most appropriate block technique. Clinical guidelines on MMA strategies and proper education programs for block techniques have been developed for different types of surgeries to not only prevent inappropriate pain control, but also limit drug-related adverse effects [13].

## Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

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