



Fast-tracking anesthetic techniques

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The ability to deliver a safe and effective anesthetic with minimal side effects and a rapid recovery is mandatory for “fast tracking” patients after surgery⁽¹⁾. Interest in facilitating the recovery process following anesthesia has led to controversies regarding the optimal anesthetic technique (e.g., local vs regional vs general), as well as the best types of anesthetic drugs (e.g., volatile, intravenous, muscle relaxant, local anesthetic, sympatholytic). Intravenous (IV) drugs remain popular for sedation, as well as induction of anesthesia, because of their ease of administration, rapid onset of action and recovery, and high patient acceptance. However, volatile (inhaled) anesthetics are more popular for maintenance of anesthesia because of the ease in titrating to an adequate depth of anesthesia during surgery. In addition, early recovery after general anesthesia can be facilitated by using a combination of nitrous oxide (N₂O), volatile anesthetics with low blood: gas partition coefficients (e.g., desflurane or sevoflurane), and short-acting sympatholytic drugs (e.g., remifentanyl, esmolol, dexmedetomidine). The preemptive use of local anesthetics and non-opioid analgesics for prevention of pain, and antiemetic drugs for prophylaxis against postoperative nausea and vomiting is also critical to the success of a fast-tracking general anesthetic technique.

Fast tracking after anesthesia was first introduced as an approach to decreasing the time to achieve tracheal extubation after cardiac surgery. Earlier extubation can lead to reduced time spent in expensive care areas (e.g., ICU, transition units) and a shorter time to discharge from the hospital, thereby reducing costs and improving resource utilization⁽²⁾, with the potential for longer-term benefits for the patient⁽³⁾. The early clinical investigations have pointed out the importance of using short-acting IV (e.g., propofol) and inhaled (e.g., desflurane, sevoflurane) anesthetics, as well as minimizing the total dose of opioid analgesic medication administered during the perioperative period⁽⁴⁻⁶⁾. In order to

minimize the adverse effects of opioid analgesics, postoperative analgesia after major surgery is increasingly being provided by spinally-administered opioids, as well as non-opioid analgesics^(5,6).

The use of short-acting anesthetic drugs (e.g., propofol, desflurane, sevoflurane, nitrous oxide, succinylcholine, mivacurium, remifentanyl, esmolol)⁽⁷⁻¹⁰⁾ and effective multimodal analgesia and antiemetic prophylaxis techniques^(11,12) has allowed outpatients undergoing superficial ambulatory surgical procedures with general anesthesia to be safely discharged home within 60 minutes. Central neuroaxis blockade is often avoided in the outpatient setting because of concerns regarding prolonged recovery secondary to delays in ambulation and micturition, as well as other well-known side effects (e.g., headache, backache)⁽¹³⁻¹⁵⁾. Peripheral nerve block and local anesthetic infiltration techniques are increasing in popularity because of their ability to minimize postoperative discomfort⁽¹⁵⁾.

Monitored anesthesia care (MAC) typically involves administration of local anesthesia in combination with IV sedative, anxiolytic and/or analgesic drugs⁽¹⁶⁾. Studies that have compared the cost-efficacy of MAC techniques to standard general endotracheal anesthesia or central neural blocks (e.g., spinal or epidural anesthesia) have consistently reduced anesthetic costs^(13,14). The standard technique for MAC involves a small dose of a benzodiazepine (e.g., midazolam 1-2 mg IV) followed by a propofol infusion (25-100 µg/kg/min). To minimize the discomfort associated with the injection of the local anesthetic, fentanyl (25-50 µg IV) or remifentanyl (0.5-1 µg IV) is administered 1-3 min prior to the local anesthetic injection.

The availability of newer anesthetic and analgesic drugs that provide for a faster onset, easier titration and a more rapid recovery, as well as the use of the laryngeal mask airway (LMA) device, has clearly facilitated the use of “fast

tracking” general anesthetic techniques in the ambulatory surgical setting^(8-10,17-19). After premedication with a small dose of midazolam (1-2 µg IV), anesthesia is usually induced with propofol (1-2 µg/kg IV) in combination with fentanyl (1-2 µg/kg IV) or remifentanyl (0.5-1 µg/kg IV) to minimize the hemodynamic response to tracheal intubation. For maintenance of anesthesia, a combination of desflurane (3-5%) or sevoflurane (0.75-1.5%) and nitrous oxide (50-70%) is recommended^(11,17,20,21). Sevoflurane is preferred over desflurane for inhalation inductions and in patients with reactive airway disease. The use of cerebral monitoring devices that can improve the titration of anesthetic drugs can also facilitate the fast-tracking process⁽²²⁻²⁵⁾.

Finally, adjunctive drugs that can minimize the anesthetic and analgesic requirements (e.g., ketamine, α -2 ago-

nists, β -blockers, adenosine, local anesthetics) are helpful in ensuring a rapid and smooth emergence from anesthesia⁽¹⁵⁾. Premedication with small doses of sedative-anxiolytic drugs, β -blockers, glucocorticoid steroids, and non-opioid analgesics (e.g., NSAIDs, COX-2 inhibitors) can further improve patient outcome by reducing postoperative side effects and facilitate the fast-tracking process⁽²⁶⁻³⁰⁾. Choosing the optimal anesthetic technique for any given procedure will insure that the patient experiences a high-quality recovery after surgery⁽³¹⁾. Educating the patient and their family members about the importance of early resumption of enteral nutrition and physical activity is also critically important for a successful fast-track recovery program. Finally, the role of the anesthesiologist is likely to expand in the future as leaders in perioperative medicine⁽³²⁾.

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