Setting Up an Ambulatory Regional Anesthesia Program for Orthopedic Surgery

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KEYWORDS

• Ambulatory anesthesia • Regional anesthesia • Peripheral nerve block • Efficiency • Quality improvement • Patient satisfaction • Optimizing perineural analgesia • Systems-based improvement

KEY POINTS

- Setting up an ambulatory regional anesthesia program for orthopedic surgery requires a multidisciplinary approach among anesthesiologists, surgeons, and nurses with all aspects of perioperative care considered.
- Regional anesthesia has distinct advantages in the orthopedic population by optimizing pain control and minimizing postoperative nausea and vomiting.
- To provide effective regional anesthesia, anesthesiologists need to consider a streamlined approach whereby peripheral nerve blocks can be placed expeditiously and post anesthesia care unit time can be minimized.
- A system needs to be in place for managing complications perioperatively.

INTRODUCTION

Ambulatory anesthesia case volume is increasing as more complex procedures are being transferred to the outpatient setting in efforts to contain costs and promote efficiency. The number of ambulatory surgeries reported by Colorado, New Jersey, and New York grew from 900,000 to 2,720,834 between 1988 and 2008.[1] Regional anesthesia complements this shift to ambulatory anesthesia by using targeted anesthesia methods that can minimize opioid requirements, reduce anesthetic side effects, promote earlier discharge, and achieve higher patient satisfaction.

POTENTIAL ADVANTAGES OF REGIONAL ANESTHESIA

Regional Anesthesia Optimizes Analgesia

Regional anesthesia allows site-specific anesthesia and analgesia, reducing and possibly eliminating the need for perioperative opioids and their related side effects.

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Local anesthetics have been shown to decrease postoperative pain.[2] Multiple meta-analyses have established that regional anesthesia provides better quality analgesia than systemic opioids. Continuous perineural local anesthetic infusions can improve analgesia for up to 48 hours after surgery compared with opioids.[3–5] Compared with single-injection peripheral nerve blockade, continuous peripheral nerve blockade results in decreased pain scores up to 48 hours postoperatively, decreased opioid use, decreased nausea, and improved patient satisfaction scores.[6]

Regional Anesthesia Decreases Postoperative Nausea and Vomiting

Postoperative nausea and vomiting (PONV) was identified as the number one postoperative complaint in a prospective interview study of more than 12,000 patients, with 13.9% of patients reporting PONV.[7] Other studies have found patients are willing to pay $17 to $100 in out-of-pocket costs for PONV treatment.[8,9] In the Society for Ambulatory Anesthesia guidelines on the management of PONV published in 2014, regional anesthesia is recommended to avoid general anesthesia and thus reduce the risk of PONV.[10]

Regional Anesthesia Can Prevent Unanticipated Admissions and Lead to Earlier Discharge

Unanticipated inpatient admissions are often attributed to pain and PONV after ambulatory surgery. Based on data from the 2006 National Survey of Ambulatory Surgery, unexpected ambulatory admission rates were 0.6% for knee procedures and 4.8% after shoulder surgery.[11] Successful regional anesthesia management can circumvent these issues.[12]

Several studies have shown decreased time to home discharge using peripheral nerve blockade over general anesthesia for patients undergoing interscalene block (ISB), infraclavicular, and axillary block for upper extremity procedures.[13–18] Patients receiving short-acting lumbar plexus and sciatic nerve blocks for outpatient knee surgery had faster discharge times as well as a greater likelihood of post anesthesia care unit (PACU) bypass.[19]

Regional Anesthesia Can Increase Efficiency

Regional anesthesia can optimize outcomes and improve operating room efficiency. A clinical pathway for anterior cruciate ligament reconstruction surgery incorporating regional anesthesia was implemented at an ambulatory surgery center in a teaching hospital in Pittsburgh. The pathway was created with multidisciplinary input from anesthesiologists, surgeons, perioperative nurses, physical therapists, and nursing administrators. Executing this clinical algorithm positively resulted in decreased pharmacy and materials cost, decreased anesthesia controlled time (time patient in room to start of positioning and prepping), decreased surgeon controlled times, a decrease in the number of required nursing interventions for common postoperative conditions, and decreased unexpected admissions for nausea, vomiting, and pain. The pathway was associated negatively with an increase in turnover time. Implementing these changes within clinical pathways provides an opportunity to maximize systems and processes, and to identify potential areas for improvement as well as opportunities to correct deficiencies.[20]

Another study on efficiency reviewed arthroscopic shoulder surgery anesthesia. ISB was shown to improve anesthesia-related workflow times over general anesthesia. The ISB group had a PACU time of 45 minutes, compared with 70 minutes for the general anesthesia group.[21]