

◆ Case Reports

Two Cases of a Wrong-Site Peripheral Nerve Block and a Process to Prevent This Complication

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Objective: The purpose of this study was to develop a system to prevent laterality errors while performing peripheral nerve blockade.

Case Report: The report depicts 2 cases of peripheral nerve blocks being performed on the wrong (nonoperative) extremity. An analysis of the circumstances in each case reveals distractions, schedule changes, and communication breakdown, which contributed to the error. A protocol to prevent these errors from occurring in the future, based on the Joint Commission on Accreditation of Healthcare Organizations guidelines, to eliminate “wrong-site” surgical procedures is developed and discussed.

Conclusions: The anesthesiologist plays an important role in preventing wrong-site peripheral nerve blockade and surgery. The protocol developed for “Pre-Anesthetic Site Verification” as a supplement to our preoperative site verification policy is invaluable in preventing wrong-site anesthesia and surgery. *Reg Anesth Pain Med* 2005;30:99-103.

Key Words: Laterality, Site verification, Peripheral nerve blockade.

The well-publicized incidence of preventable medical errors remains one of the most critical issues confronting medical professionals today.¹ One of these errors, wrong-site surgery, is among the leading concerns of patient safety advocates and the Joint Commission on Accreditation of Healthcare Organizations (JCAHO). It is a potentially devastating problem that can occur within any surgical specialty and can have serious medical and legal consequences. Wrong-site surgery is usually caused by either a breakdown in the communication system or the lack of a system to verify the surgical site.² Correct-site surgery is best accomplished by

collaboration of the entire perioperative team. Peripheral nerve blocks also can require site verification similar to that required for the surgical procedure.

Regional anesthesia has enjoyed a tremendous resurgence over the past few decades, specifically involving peripheral nerve blockade of the upper and lower extremities. Avoidance of general anesthesia and improved postoperative analgesia have all contributed to this resurgence. In 2003 at Hospital for Special Surgery, our anesthesiologists performed over 19,500 anesthetics; 44% of these procedures consisted of unilateral peripheral nerve blocks. Because peripheral nerve blockade is such an important part of our practice, participating in the verification process to ensure correct-site surgery is paramount. However, many of the verification steps in our hospital's policy occur just after the anesthetic block and before skin incision. Laterality is a major, yet often under appreciated, concern before performing peripheral nerve block techniques. We report 2 cases of wrong-site peripheral nerve block. These reports justify the importance of developing a standardized process to prevent wrong-site regional anesthetic techniques.

See Editorial page 1

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Case Report 1

A 29-year-old woman, American Society of Anesthesiologists physical Status III, with an 18-year history of insulin-dependent diabetes complicated by retinopathy, gastroparesis, hypertension, peripheral neuropathy, and chronic renal failure, was scheduled for an open reduction and internal fixation for a nonunion fracture of the right humerus, sustained during a recent fall. Her chronic renal failure was managed with hemodialysis 3 times per week using a previously placed arteriovenous fistula in the left arm. She underwent hemodialysis on the day of surgery. Her preoperative physical examination was remarkable for bandages covering both arms for injuries sustained because of the fall. Anesthetic consent was obtained by the attending anesthesiologist for an interscalene brachial plexus block and intravenous sedation. As per hospital protocol at the time, the operative extremity was labeled by the nurse with a clear tape dressing with the words "this side only." The nonoperative extremity received a similar label stating "not this side." The patient was transported into the operating room, monitors were applied, and an intravenous line was placed in a lower extremity. No sedatives were administered, and the patient remained alert and awake. Before administering the anesthetic, a disruption occurred in the operating room involving 2 members of the perioperative team, which escalated into a tumultuous argument that was resolved outside the operating room. Shortly after this distraction, the attending anesthesiologist, placed a left-sided interscalene block using a paresthesia technique, followed by injection of 30 mL 1.5% mepivacaine with 0.1 mEq/mL bicarbonate, 1:300,000 epinephrine, and 20 mL 0.75% bupivacaine. The error in laterality was discovered shortly after completion of the block and the anesthetic was converted to general anesthesia. The remainder of the intraoperative and postoperative course was unremarkable.

Case Report 2

A 68-year-old woman, American Society of Anesthesiologists physical status II, was admitted to the hospital for removal of an infected left total hip hemiarthroplasty and placement of an antibiotic impregnated cement spacer. The patient's evaluation before surgery was conducted in the preoperative holding area, and anesthesia consent was obtained for a combined spinal epidural and a psoas block for postoperative analgesia. The surgical site alone was "signed" with the surgeon's initials as per our revised hospital protocol.

A scheduling change in the operating rooms oc-

curred. The operative location had previously been prepared for a right total hip arthroplasty by the support staff, but that case was canceled. The current patient was brought into the new operating room and monitors were applied. The patient received a total of 5 mg midazolam in incremental doses. She was responsive to tactile but not verbal stimulation. After completion of arterial line placement, the patient was placed into the left lateral decubitus position and a right psoas block was performed using 30 mL 0.25% bupivacaine with 1:200,000 epinephrine. This was followed by a combined spinal-epidural using 3 mL 1.5% isobaric mepivacaine. After administration of the anesthetic, the surgical team began final positioning of the patient and discovered the patient was positioned on the incorrect side and that the psoas block had been performed incorrectly as well. The patient was then positioned correctly, and the surgical procedure proceeded uneventfully. At the completion of the procedure, a left-sided psoas block was administered for postoperative analgesia using 30 mL 0.25% bupivacaine with 1:200,000 epinephrine. The patient's subsequent hospital stay was uneventful.

Discussion

We report these cases to bring attention to the potential for wrong site peripheral nerve blockade in a busy anesthetic practice. In both cases, the correct site surgery was performed; however, the regional anesthetic block was administered to the incorrect site. In 1998, the JCAHO published *Sentinel Event Alert* identifying wrong-site surgery as a major preventable medical error.² Despite efforts to prevent this error, a follow-up issue of *Sentinel Event Alert* published in December 2001 reported 150 cases.² On May 9, 2003, the JCAHO organized a summit to discuss "Wrong Site Surgery."³ The participants included representatives from the American Academy of Orthopedic Surgeons, the American College of Surgeons, the Association of Operating Room Nurses, the American Hospital Association, the American Society of Anesthesiologists, and the American Association of Nurse Anesthetists. The conference identified several contributing factors to wrong-site surgery including time pressure, room changes, communication errors, distractions, missing information, operating room hierarchy, orientation/training, and failure to follow hospital protocol. The root causes of wrong-site surgery as outlined by the JCAHO involve a failure in one or more of the following areas: (1) preoperative verification, (2) time out before beginning the procedure, (3) site marking, (4) proce-

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