

ORIGINAL ARTICLE

Peripheral Nerve Blocks Causing Increased Risk for Fall and Difficulty in Ambulation for the Hip and Knee Joint Replacement Patient

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A systematic review of the literature was completed by the Evidence-Based Practice Group for the Patient population, Intervention/Issue, Comparison Intervention, Outcomes, Timing (PICOT) question: "Does the use of a peripheral nerve block increase the risk for falls and difficulty ambulation in patients after lower extremity surgery through postoperative day 2?" A search of multiple databases using specified key terms resulted in 258 articles for total knee arthroplasty or total hip arthroplasty. These were reduced to 13 with exclusion criteria and became primary evidence. Numbers Needed to Harm and Numbers Needed to Treat (NNT) were calculated. Numbers Needed to Harm supported the PICOT question. Further research of postoperative falls and nursing interventions to reduce or prevent falls is suggested before creation of a Clinical Practice Guideline.

Keywords: arthroplasty, joint replacement, nerve block, fall.

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EVIDENCE-BASED NURSING PRACTICE necessitates searches for best evidence to evaluate and design best practice for patients. The Evidence-Based Practice Group (EBPG), made up of a diverse group from several healthcare organizations, identified and discussed the common concern of

patient falls in the postoperative patient who has received a peripheral nerve block (PNB). Falls are "defined as an unplanned descent to the floor with or without injury to the patient."¹ The EBPG performed a targeted multidisciplinary literature search for a Clinical Practice Guidelines (CPG) related to postoperative ambulation with PNB; none were discovered in AHQR, CINAHL, or Cochrane databases. This integrated review of the literature was undertaken to assess the need for a CPG related to patient postoperative ambulation after receiving a PNB. The EBPG formulated the Patient population, Intervention/Issue, Comparison Intervention, Outcomes, Timing (PICOT)² question: "Does the use of a PNB increase the risk for falls and difficulty with ambulation in patients after lower extremity surgery through postoperative day two?"

Significance of Problem

The importance of this topic is evidenced by the large number of patients who have total hip

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arthroplasty (THA) and total knee arthroplasty (TKA) procedures annually. Ilfeld et al³ indicate that more than one million THA and TKA procedures are executed yearly in the United States, with this number to increase to four million over the next 20 years. Leach and Bonfe⁴ emphasize that TKA has “become one of the most common orthopaedic procedures performed in older persons in the United States.”

This large, mostly elderly population may have an increased risk for falling postoperatively.⁵ Johnson et al⁶ indicate that postsurgical patient falls can be as high as 16%. With one million patients that can equate to 160,000 falls annually. Clarke et al,⁷ however, indicate that more conservatively among orthopaedic surgery, the fall rate is about “one to three falls per 1,000 patient days.” In the United States, hospitals can shoulder the additional cost associated with inpatient falls.^{1,6,7} These falls can result in serious injury.⁸

THA and TKA are painful procedures.^{3,9-11} Unresolved pain impacts patient’s sleep,¹² activity levels/rehabilitation,¹²⁻¹⁵ and possibly length of hospital stay.^{10-14,16} Aiding early rehabilitation, reducing complications, and improving pain management after major orthopaedic surgeries such as THA and TKA are of primary importance^{5,13,14} for surgeons, anesthetists, and nurses.

The importance of early postoperative ambulation and rehabilitation after major orthopaedic surgeries, such as THA and TKA, has been emphasized to improve patient outcomes and reduce complications.^{10,12,13,15} Complications that early ambulation may reduce include venous thromboembolism,¹² arthrofibrosis, and pneumonia.¹⁷ PNB use also reduces complications associated with opioid use^{6,10,12,14} including nausea and vomiting,^{13,17} hypotension, and respiratory depression.¹⁷

PNBs are a vital tool used for THA and TKA pain management.^{10,13,15,16} PNBs for lower extremity surgery include femoral nerve blocks (FNBs), lumbar nerve blocks,⁵ sciatic nerve block,⁷ as well as continuous FNBs, continuous posterior lumbar plexus nerve blocks, and psoas compartment blocks.⁶ A problem with PNBs is reduced muscle strength^{3,10,16} causing muscle

weakness.^{7,9,15} The use of PNBs or continuous PNBs (cPNB) may be connected to patient falls via quadriceps weakness.^{7,9,10} The aim of this EBP project was to determine if there is evidence of increased falls or difficulty with ambulation in patients that receive a PNB for lower extremity surgery and to identify treatment objectives for nurses. A secondary aim was to write a CPG for this patient population.

Methods

Key terms and limiters were prepared by the lead EBP member. Key terms are located in [Figure 1](#). One difficulty with key term formulation was the fact that there is not one recognized word/phrase for a knee replacement procedure or hip replacement procedure. For example, knee replacement procedure key terms include total joint replacement, total knee arthroplasty; total joint arthroplasty; total knee replacement; joint replacement; or lower extremity surgery. The same was true for nerve blocks that were also listed by specific name (eg, FNB, sciatic); block; or PNB. This necessitated more key words linked by and/or.

Another problem with key term formulation was the term “difficulty ambulation.” The EBP member was unable to operationalize “difficulty ambulation” specifically because it is not in the literature. However, it was inferred through quadriceps weakness, which can cause problems with the ability to ambulate.

Each EBP member worked independently and used the key terms and limiters to search among the following databases: CINAHL Plus with Full Text, MEDLINE, Health Source: Nursing/Academic, AHQR, Cochrane Institute, Joanna Briggs Institute, EBSCO host, OVID, Shapiro Library, and PubMed. All searches were conducted electronically and limited to peer-reviewed journals in the English language with full text available between January 1, 2000, and October 31, 2013. Two EBP members lost their initial search histories and restarted their searches before culling evidence. Evidence from descriptive articles, qualitative studies, and opinion papers were excluded by hand. No hand searches were conducted; however, references from evidence retrieved were reviewed for inclusion. Many of

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