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Response to: Comment on “Comparison of the pericapsular nerve group block with the intra-articular and quadratus lumborum blocks in primary total hip arthroplasty: a randomized controlled trial”

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Running title: PENG vs QLB vs IA for hip arthroplasty

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We would like to thank Gupta et al. [1] for their interest in and comments on our randomized controlled trial [2].

In our study, body weight was measured for the pericapsular nerve group (PENG) block (75.66 ± 9.7), quadratus lumborum block (QLB) (80.90 ± 12.11) and intra-articular group (81.72 ± 10.97). The dose of bupivacaine administered to the patients included in the study did not exceed the recommended safe dose. We agree that drug pharmacokinetics in geriatric patients may be significantly affected by age-related organ dysfunction. Therefore, the blocks were administered appropriately by an experienced specialist and monitored closely. Local anesthetic toxicity was not observed in any of the patients followed up during our study.

Studies on the effective volumes and concentrations of postoperative analgesia for PENG blocks and QLBs in patients undergoing total hip arthroplasty are ongoing. Various volume and concentration studies have been reported in the literature; however, neither have been fully clarified. We selected a volume of 20 ml for the PENG blocks, as this is the volume frequently preferred in the literature. However, we were concerned about the volume of the QLB because the affected dermatome area differs according to the volume applied. We chose 30 ml as the most appropriate volume given the dermatomes affected by the QLB in healthy volunteers and cadavers [3,4]. A volume of 60 ml was
selected for the intra-articular group to avoid exceeding the regular dose range reported in the literature. This same dose and volume was used in the study conducted by Bravo et al. [5].

Our patient population spanned a wide range of ages. However, due to insufficient sample size, analyzing variations in sensitivity to local anesthetic agents in each block group according to age could not be conducted as the results would not have been reliable. However, we encourage future research be conducted to examine these differences.

In our study, 56.2% of the patients underwent total hip replacement surgery with joint degeneration and limitation of movement not caused by hip fractures. Therefore, evaluating intra-articular bupivacaine administration in terms of postoperative chondrolysis was not considered appropriate. Additionally, we agree that ropivacaine is a safe drug, and plasma concentrations confirm its safety even at high doses. However, the only long-acting local anesthetic available was bupivacaine.

As mentioned in the Discussion section, the lack of a control group was a limitation of this study. However, PENG block and QLB applications have been shown to be effective in studies with control groups. Our aim was to compare and evaluate the PENG block and QLB in terms of postoperative analgesia and quality of recovery and compare them with the traditional method of intra-articular local application. Based on the study results, we concluded that PENG block and QLB applications provided effective analgesia postoperatively but did not contribute to recovery.

In our clinic, we prefer the sham procedure as a blinding method to a sham block with high-volume saline. The sham procedure was performed with high precision and care to maintain blindness. The specialist performing the block did not see the patient during randomization or postoperative evaluation. In addition, the patient’s front was covered during the sham procedure so the patient could not see the block application. The postoperative pain assessors, nurses, and patients were blinded to the intervention group, including the data collection process.
The PENG block is a preferred motor-sparing block because only the articular branches of the sensory nerve fibers, femoral nerve, and accessory obturator nerve are involved. However, the mechanism of femoral nerve block with volumes greater than 20 ml may be due to anesthetic spread between the pectineus and psoas, targeting the femoral nerve. Further volume and concentration studies are required to confirm this. We agree with Gupta et al. [1] that correct needle positioning is important for preventing motor weakness when applying a PENG block.

Postoperative pain management and effective rehabilitation in patients with total hip arthroplasty remain important topics. Any efforts to improve outcomes in this patient population is therefore welcome. We would like to thank Gupta et al. for their comments, as they presented several issues that should not be overlooked.
References


