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LETTER

Effect of Pericapsular Nerve Group Block with Different Concentrations and Volumes of Ropivacaine on Functional Recovery in Total Hip Arthroplasty: A Randomized, Observer-Masked, Controlled Trial [Letter]

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Dear editor

We read with great interest the article by Huang et al[1] entitled "Effect of Pericapsular Nerve Group Block with Different Concentrations and Volumes of Ropivacaine on Functional Recovery in Total Hip Arthroplasty: A Randomized, Observer-Masked, Controlled Trial". With a randomised, observer-masked, controlled trial, they aimed to test whether reducing the volume or concentration of ropivacaine was better for motor blockade after PENG blockade and concluded that 10 mL of 0.5% ropivacaine was recommended for PENG blockade in 20 mL of 0.5%, 20 mL of 0.25% and 10 mL of 0.5% ropivacaine. We recognise the work of the authors and appreciate the objective discussion of their findings, including some of the inherent limitations noted. However, after extensive discussion with our panel of professional peers, we have several salient and pertinent questions that we hope you will address:

Firstly, this study aimed to assess the effectiveness of PENG block surgery with ropivacaine at different concentrations and volumes in patients undergoing hip surgery, and various factors were collected and analysed, including statistical analyses of age, gender, body mass index and duration of surgery in the subjects, with no significant differences found. However, considering only the above baseline characteristics without taking into account potential aspects, such as issues of surgical access (anterior or posterior) and surgical etiology (eg, osteoarthritis of the hip, osteonecrosis of the femoral head, hip dysplasia, or hip fracture) for total hip arthroplasty, are factors that may affect the accuracy and applicability of the conclusions. Previous studies have demonstrated that different surgical access routes for THA have different effects on hip muscle status and even recovery in the early postoperative period.[2] This is a key point as there may be significant differences in the effectiveness of interventions between different access routes or disease types and understanding these differences is essential for clinical practice. The trial would have been more convincing and clinically useful if the authors had further explored the effect of PENG block on postoperative functional recovery after THA in different access routes or aetiologies for subgroup analyses in a subsequent study.

Secondly, when assessing sensory blockages, more reliance is placed on the subjective sensations described by the patient. This subjectivity introduces the possibility of bias and variability in the interpretation of symptoms. We therefore recommend that the quadriceps muscle strength of participating patients be verified by electromyography or other electrophysiological examination techniques, which may yield more objective results.

In addition, results from recent years suggest that the extent of local anaesthetic diffusion for these interfascial plane blocks may be largely dependent on tissue compliance, with individualised variation, and independent of the precise

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needle tip position within the interfascial plane.[3] Imaging methods were not used in this study to assess the diffusion range of different volumes of ropivacaine. It is worth noting that most studies of local anaesthetic diffusion in the context of PENG block surgery have been performed using human cadavers, with very few analyses of living patients and/or volunteers. In the future, it may be possible to use MRI or 3D-CT strategies to better visualise the diffusion of local anaesthetics administered using radiographic contrast agents during the performance of QLB block procedures.

It's worth noting that we would like to draw the reader's attention to recent findings in the field that may broaden the understanding of this article. Wen et al[4] conducted an important study to explore the appropriate volume of ropivacaine for peripheral nerve group (PENG) blockade after general anaesthesia in elderly people undergoing hip arthroplasty and concluded that the 20 mL 0.33% ropivacaine group had better motor function preservation than the 30 mL 0.33% ropivacaine group and better postoperative pain relief in the 20 mL and 30 mL volumes of 0.33% ropivacaine than in the 10 mL 0.33% ropivacaine group. It was concluded that the 20 mL 0.33% ropivacaine group had better preservation of motor function than the 30 mL 0.33% ropivacaine group and that the 20 mL and 30 mL volumes of 0.33% ropivacaine groups had better postoperative pain relief than the 10 mL 0.33% ropivacaine group.

Finally, we would like to thank Huang and his colleagues once again for an important study. We hope that our reflections can help researchers improve the design of subsequent studies and can help readers better interpret the results of the article, thus inspiring future scientific research.

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Disclosure

The authors declare that there is no conflict of interest in this communication.

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