

# 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 [Response to Letter]

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## Dear editor

We thank Dr Wang et al<sup>1</sup> for their interest in our study.<sup>2</sup> They expressed some concerns regarding the methodological issues, proposing to conclude the result using more scientific and objective methods.

Firstly, we agree with that issues of surgical access and surgical etiology are factors that may affect the accuracy of hip muscle status. Total hip arthroplasty (THA) is a widely used method for treating hip fractures and femoral head necrosis.<sup>2</sup> In our study, there was no statistically significant difference in the number of patients with femoral head necrosis and fracture among the three groups. In addition, surgical methods used in our study among the three groups were both lateral incisions, but they were not clearly described in the method, which is a limitation of our study. We will further improve it in the future.

Secondly, we assess sensory blockages and postoperative quadriceps motor block based on the methods of previous literature.<sup>3-5</sup> We do not deny that electromyography or other electrophysiological examination techniques are more objective for verification. If conditions permit, we will further verify in the future.

Thirdly, our randomized comparative trial shows that PENG block with 20 mL 0.5%, 20 mL 0.25%, and 10 mL 0.5% ropivacaine provides equally effective pain control. This is slightly different from the conclusion drawn by Wen et al<sup>6</sup> that the postoperative analgesic effect of the 20mL and 30mL groups of 0.33% ropivacaine is better than that of the 10mL group of 0.33% ropivacaine. Possible reasons are as follows: Group C in our study used 10mL of high concentration 0.5% ropivacaine. High concentration ropivacaine will provide more comprehensive analgesia.<sup>7</sup> Besides, for THA, guidelines<sup>8</sup> recommend the multimodal analgesia. Postoperatively, all patients in three groups in our study received the same multimodal analgesia.

In conclusion, although we have preliminarily concluded that a higher incidence of motor blockade of PENG block was mainly caused by excessive volume, we share the concerns of Dr Wang et al regarding a methodological issues. As Dr Wang et al mentioned, we hope that future studies will confirm our findings using electromyography or other electrophysiological examination techniques to verify quadriceps muscle strength, and MRI or 3D-CT strategies to better visualize the diffusion of local anaesthetics administered.

## Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Disclosure

The authors report no conflicts of interest in this communication.

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