



In reply: Comment on: Brachial plexus block at the level of the humeral head: a proof-of-concept observational cadaver and clinical study

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To the Editor,

We appreciate the interest and comments raised by Drs Sonawane and Mistry regarding our exploratory study on the brachial plexus block performed at the level of the humeral head.¹

We agree with the concept of the axillary tunnel, bounded laterally by the humeral head.² The humeral head, visible on ultrasound by a typical three-layered

configuration, serves as the key landmark for this approach. It enables a reproducible puncture outside the thoracic wall and therefore eliminates the risk of pleural puncture. As observed in three cadavers and in 20 patients, the neural structures lie in close proximity to the axillary artery, allowing for a straightforward periarterial injection. The absence of methylene blue diffusion beyond the perivascular space confirms the presence of a closed diffusion compartment previously described.²

The type of neural structure encountered (nerves, cords, or a combination of nerves/cords) was identified through distal dissection of the nerves on the arm, which allowed us to observe the movement of these structures when gentle traction was applied proximally. In one cadaver, the entire brachial plexus was dissected, and the neural elements were found to be continuous with the nerves at axillary level. As the goal was to perform a block to the brachial plexus in the context of hand surgery, the axillary nerve was not identified during the dissection.

The musculocutaneous nerve leaves the brachial plexus at the level of the humeral head, with considerable anatomical variation.³ At the axillary level, arm abduction brings the musculocutaneous nerve closer to the axillary artery⁴ without obstructing visualization of the radial nerve.⁵ Given the proximity of the humeral head and axilla, it is reasonable to expect that the musculocutaneous nerve lies even closer to the artery when the arm is abducted. In our experience, arm abduction does not impede the visualization of the radial nerve, which remains located anterior to the humeral head.

This technique relies on identifying the humeral head as a simple and reliable ultrasound landmark. It represents a first step towards developing a new approach to brachial plexus blockade, in which the plexus is clustered around the artery and located outside the thorax, thereby eliminating any risk of pleural puncture. The possibility of continuous regional analgesia may also be considered.

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Comparative studies incorporating objective nerve mapping, larger sample sizes, and standardized outcome measures are required before broader clinical adoption can be recommended.

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