

## Costoclavicular Space

### A Reliable Gate for Continuous Regional Anesthesia Catheter Insertion

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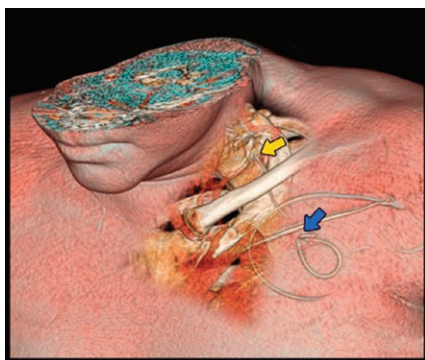


Fig. 1

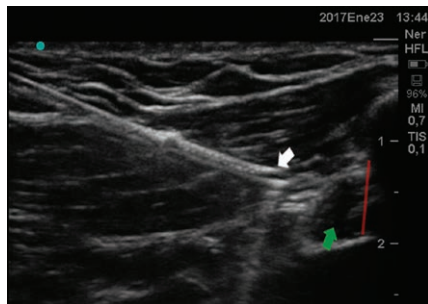


Fig. 2

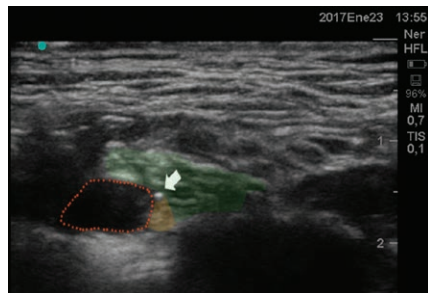


Fig. 3

CONTINUOUS ultrasound-guided brachial plexus blocks are indicated for pain control and rehabilitation after hand and elbow surgery.<sup>1</sup> The traditional supraclavicular approach implies a high risk of accidental catheter displacement. We describe an approach to the supraclavicular region through the costoclavicular space.<sup>2,3</sup> Figure 1 shows a reconstructed image of a catheter placed using this technique with its entry point (blue arrow) and tip position (yellow arrow) marked.

As seen in figure 2, the needle is introduced 5 cm caudal to the clavicle, and its tip (white arrow) is advanced in-plane within the pectoralis major muscle, pointing to the subclavian muscle (green arrow) and the entry of costoclavicular space (red line). Once the tip view is lost under the clavicular anechoic shadow, a supraclavicular plexus image is obtained, and the needle is advanced out-of-plane, rubbing the clavicular periosteum, toward the “corner pocket.” The needle tip finally appears as a hyperechoic dot in the ultrasound image, and the catheter is advanced and left in place: figure 3 shows catheter tip (arrow) lateral to subclavian artery and surrounded by supraclavicular brachial plexus (shaded in green with “corner pocket” shaded in orange).

The greatest challenge of this procedure is to avoid puncturing the pleura and subclavian vessels. We become aware of their locations through ultrasound examination before the procedure.

Although there is a lack of preceding literature, in our experience, this approach offers better mechanical stability than the traditional supraclavicular approach. Because the catheter pierces the pectoralis major and subclavius muscles, a larger proportion of it remains tunneled and a wider range of safe neck movements is achieved.

#### Competing Interests

The authors declare no competing interests.

#### Correspondence

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#### References

1. Ilfeld BM, Morey TE, Wright TW, Chidgey LK, Enneking FK: Continuous interscalene brachial plexus block for postoperative pain control at home: A randomized, double-blinded, placebo-controlled study. *Anesth Analg* 2003; 96:1089–95
2. Sala-Blanch X, Reina MA, Pangthipapai P, Karmakar MK: Anatomic basis for brachial plexus block at the costoclavicular space: A cadaver anatomic study. *Reg Anesth Pain Med* 2016; 41:387–91
3. Karmakar MK, Sala-Blanch X, Songthamwat B, Tsui BC: Benefits of the costoclavicular space for ultrasound-guided infraclavicular brachial plexus block: Description of a costoclavicular approach. *Reg Anesth Pain Med* 2015; 40:287–8

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