Interfascial Catheter Buckling: Possible Cause of Continuous Peripheral Nerve Block Failure?

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To the Editor,

Continuous peripheral nerve blocks offer advantages over single-injection blocks in terms of extended duration of analgesia, reduced opioid consumption, and opioid-related side effects. It also improves patient satisfaction, prevents motor blockade, and inadvertent blockade of adjacent nerves.¹ This is only possible if the perineural catheter remains close to the target nerve for the duration of the planned local anesthetic infusion postoperatively. Known complications include displacement, leakage, failure, infection, and catheter migration.²

Here we are going to describe a case of continuous infraclavicular brachial plexus block failure, possibly due to interfascial bending/bucking of a catheter.

Ultrasound (M-Turbo, Fujifilm Sonosite, Inc., Bothell, WA, USA) guided continuous classical approach of infraclavicular brachial plexus block was achieved in a patient scheduled for fracture both bone forearm fixation. After a bolus dose of 15 mL 0.5% bupivacaine, a 19 G epidural catheter (Portex Epidural Mini Packs, Smiths Medical, Ashford, UK) was threaded through the Touhy needle. After confirming the site of injection under ultrasound, the catheter was fixed at 14 cm with skin adhesive (Histoacryl®, B. Braun, Melsungen, Hessen, Germany) and a sterile dressing. We used epidural catheters in our set up due to the unavailability of specialized catheters for the same. The surgery lasted for 1.5 hours without the requirement of any top-ups through the catheter.

Postoperatively, 5 mL/h of 0.1% ropivacaine infusion was started. Despite the infusion, the patient started complaining of pain after about 3 hours with a numerical rating scale > 4. A bolus dose was given under ultrasound (USG) guidance to see the spread of drugs. We found the spread of drugs away from the target point in ultrasound, despite the catheter being fixed at 14 cm at the skin.

Various techniques described to prevent the displacement of continuous catheters include tunneling, suturing, commercial adhesives like dermabond (2-oc-tylcyanoacrylate) or Mastisol³ and suture method perineural catheter system.⁴ All of them prevent displacement due to external force but none of them are effective to prevent interfacial/intermuscular catheter movement during mobilization. In our patient, though the external fixation mark remained the same, the catheter had been misplaced from its exact position. This could have happened due to interfacial movement during contraction of two different groups of muscles: pectoralis major and pectoralis minor during limb mobilization (during painting/draping) or surgical intervention (Figure 1). The force of contraction of these two muscles may be in the same direction but may not be coordinated during passive movement or manipulation.

Hence, we suggest that it is safer to check the position of the catheter by giving a bolus before starting an infusion, or using intermittent bolus doses (visualization using USG) and restricting the limb mobilization, if possible.

Conflict of Interest

None.

Received: 24 October 2019; Received in revised form: 4 March 2020; Accepted: 11 March 2020.
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Funding

None.

Informed Consent

This was taken from the patient.

References


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