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Ultrasound in Emergency Medicine

CASE REPORT: ULTRASOUND-GUIDED INFRACLAVICULAR BRACHIAL PLEXUS BLOCK FOR A CASE WITH POSTERIOR ELBOW DISLOCATION

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☐ **Abstract—Background: The interest in regional anesthesia procedures for the management of upper-extremity emergencies has increased. Toward that end, supraclavicular, interscalene, or infraclavicular approaches, with or without ultrasound guidance, are used for brachial plexus nerve blocks. Although many studies have reported on the use of ultrasound-guided supraclavicular and interscalene brachial plexus blocks for upper-extremity dislocations, very few studies have reported on the use of ultrasound-guided infraclavicular brachial plexus blocks. Case Report: We present an adult patient with posterior elbow dislocation that is treated with reduction after applying an ultrasound-guided infraclavicular brachial plexus block. Additionally, we describe the infraclavicular block in detail and demonstrate the technique using images. Why Should an Emergency Physician Be Aware of This?: Based on our experience, the ultrasound-guided infraclavicular block is a fast, safe, and efficient anesthesia technique that can be an excellent alternative to sedoanalgesia and other brachial plexus blocks for the management of elbow dislocations in the emergency department.** **© 2017 Elsevier Inc. All rights reserved.**

☐ **Keywords—ultrasound-guided; infraclavicular brachial plexus block; elbow dislocation; regional anesthesia**

INTRODUCTION

Elbow dislocations are common complaints in emergency departments. While the elbow is the most commonly dislocated joint in adults, after the shoulder, it is the most common dislocation in the pediatric age group (1,2). Immediate reduction is essential, and reduction under deep sedation is the most commonly used treatment method in emergency departments (3).

The interest in ultrasound-guided regional anesthesia has increased. That increased popularity also implies the necessity of choosing the best type of regional anesthesia. Supraclavicular and interscalene approaches with ultrasound guidance are well-known types of regional anesthesia used in upper-extremity dislocations (4,5). However, a few studies in the medical literature have reported on the use and the efficiency of ultrasound-guided infraclavicular block to treat joint dislocation with reduction and provide comfort for patients. This article presents detailed information about our experience using the infraclavicular brachial plexus block (IBPB) technique for a case of elbow dislocation that was easily and painlessly reduced.

CASE REPORT

A 21-year-old man was admitted to the emergency department at our hospital with the complaint of right elbow pain and swelling due to falling and landing on his arm. Radiograms detected posterior elbow dislocation without fracture (Figure 1). The patient's medical history failed to contribute useful information.

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Figure 1. Anteroposterior (A) and lateral (B) elbow x-ray images demonstrate posterior elbow dislocation.

Physical examination and laboratory data were within normal limits, except for pain with elbow movements. Neurologic examination demonstrated that the right upper extremity was intact. The Visual Analogue Scale (VAS) score was 9 at the time of admittance. IBPB was planned to manage the elbow dislocation in order to expedite the procedure and increase the patient's comfort. The patient was informed about the benefits and risks of the procedure, and written consent was obtained.

The ultrasonography machine (Philips HD6, Philips Ultrasound Systems, Bothell, WA) was prepared and the transducer and related skin region were cleaned with antiseptic solution to ensure sterility. After the preparation process for a routine percutaneous interventional procedure, the target injection area was specified as medial to the coracoid process inferior to the clavicle. A linear transducer was placed at the target area, and the anatomy of the region was reviewed again (Figure 2). A 50-mm, 22-gauge blunt-tipped needle was advanced caudo-medio-dorsally under ultrasonographic guidance until the brachial plexus nerves were located around the axillary artery (Figure 3). After negative aspiration, 10 mL bupivacaine 0.25% was injected into the dorsal and lateral aspect of the axillary artery. Ten minutes after the injection, the VAS score was 0 and no motor movement was observed. The elbow was easily reduced with appropriate maneuver without any pain or complications. The control radiogram confirmed normal elbow joint position. There was no need to apply additional analgesia after the procedure.

DISCUSSION

This article presents a posterior elbow dislocation case that was easily, quickly, and painlessly reduced after using ultrasound-guided IBPB. It provides step-by-step details about how we performed the block. Although this technique is not as easy and fast as conscious sedation, which is a commonly used method during upper-extremity dislocation reductions, we decided to perform it because our team is experienced in this procedure. In addition, according to our experiences, this technique provides more comfortable reduction and longer pain control (approximately 12 h) without using extra sedoanalgesia drugs. In the medical literature, very few articles have investigated the use of ultrasound-guided IBPB. Heflin et al. used 25 mL mepivacaine 1.5% as the local anesthesia for emergency management of a posterior elbow

Figure 2. The photo demonstrates the proper position of the linear transducer that was placed at the target area for the infraclavicular brachial plexus block.