ULTRASOUND-GUIDED FEMORAL NERVE BLOCKAGE IN A PATELLAR DISLOCATION: AN EFFECTIVE TECHNIQUE FOR EMERGENCY PHYSICIANS

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INTRODUCTION

While a lateral dislocation is the most common type of patellar dislocation, other types of dislocations, including intra-articular dislocations, are rare (1). Patients who present to the emergency department may require pain control (e.g., parenteral morphine or fentanyl) and sedation before reduction (2). There are no reports of the use of ultrasound (US)-guided femoral nerve block in patellar dislocation in the literature.

The use of regional anesthesia techniques in orthopedic emergencies is becoming more common (3,4). A femoral nerve block, a regional anesthesia technique, is used for surgeries on the anterior surface of the femur and in the knee (5). It is relatively easy to view the femoral nerve with US and perform the blockage because its anatomic position runs close to the surface.

We performed a femoral nerve blockage on a patient who suffered a traumatic patellar dislocation and underwent a pain-free and comfortable patellar reduction. We present this case to discuss the effectiveness of a femoral block in patellar dislocation cases, its ease of use, and patient comfort provided by this technique.

CASE REPORT

A 21-year-old man patient presented to our emergency department (ED) after a fall on a flight of stairs. The
initial physical examination and plain radiography showed a patellar dislocation in the right knee (Figure 1). There were no fractures and no blood vessel or nerve damage in the nearby tissues. The patient’s medical history was insignificant other than a revision surgery for a burn scar suffered during childhood. The visual analog scale (VAS) score for pain in his right knee was 8. The patient was placed in the supine position on the table, and his electrocardiogram and other vital signs were monitored. His right inguinal region was disinfected. The linear US probe (12 MHz) was placed transversely on the femoral artery-vein-nerve triangle. The femoral nerve was visualized lateral to the femoral vein. The needle was advanced in-plane with the US probe (Figure 2). A total of 15 mL of local anesthetic (7.5 mL 0.25% bupivacaine [Marcaine; AstraZeneca, London, United Kingdom] and 7.5 mL of 140 mg 1% lidocaine hydrochloride [Aritmal, Osel, Istanbul, Turkey]) was injected. The VAS score in the right knee was reduced to 0 just 5 minutes postinjection. The knee was then extended and the patella was easily reduced following a manipulation towards the medial aspect of knee joint. The patient did not require further analgesics after the procedure.

**DISCUSSION**

Patellar dislocations usually occur during the second and third decades of life. Reduction of a dislocated patella is a painful procedure. Sports and activities frequently associated with lateral patellar dislocations include gymnastics, soccer, ice hockey, dancing, weight lifting, and military training (6).

Femoral nerve block is commonly used in clinical procedures for surgical anesthesia and postoperative pain management. This nerve block provides anesthesia of the skin and muscles of the anterior thigh and most of the femoral region and knee joint. Kim et al. evaluated the usefulness of US-guided lower extremity block in 23 patients with patellar fracture surgery in their study and reported satisfactory results (7). Femoral nerve block is an easy to learn nerve block technique with low complication risks. It is the technique of choice for anterior femur and knee surgeries, quadriceps tendon repair, and postoperative pain management after femur and knee surgeries (8).

The complications of femoral nerve block are the same as with other regional nerve blocks, and include infection,
accidental injection of the local anesthetic into the vessel, hematoma, vascular puncture, and nerve damage (8). The neurologic complication rate was reported as ≤0.3% in a review (9). Widmer et al. reported the overall complication rate of femoral nerve block specifically as 1.94% in their study including 1802 cases (10). Paying attention to some points can minimize the complications. To prevent any infections, asepsis/antisepsis rules must be observed. Negative aspiration must be performed just before every injection to prevent the local anesthetic injection into the vessel. To hinder the hematoma and vascular damage, pinpoint must be seen in every needle movement, and it must not be directed to the femoral artery or vein that are located medial to the femoral nerve. The needle must be lightly withdrawn if any pain occurs in the femoral nerve trace or the operator feels any resistance during the injection. In this way appropriate perineural injection is provided and it prevents nerve damage (8).

Because the femoral nerve traces superficially in the inguinal region, this nerve block is relatively easy to perform. In addition, to be able to display the femoral nerve on US makes it easier to perform the procedure in EDs.

Procedural analgesia is commonly used for these types of painful procedures in EDs (11). There are also reports suggesting the use of regional anesthesia techniques for shoulder and elbow dislocations (12–14). Several researchers have reported cases where femoral nerve blocks and adductor canal blockages were used for pain management after patellar dislocation surgeries (15,16). Hoy and Walpole reported a series of three cases of patellar dislocation successfully reduced after femoral nerve block in 1993 (17). However, we were unable to find any other reports in the literature where a femoral nerve block was used for pain management for a patellar dislocation. We used an US-guided femoral block technique in our patient who suffered a lateral patellar dislocation. The patient did not need additional analgesia after the procedure.

**WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?**

Blockage of the femoral nerve, which lies close to the surface in the inguinal region and is easy to view with US, is a relatively easy technique with few complications. This technique is an effective option for pain management during the reduction of a dislocated patella in the ED.

**REFERENCES**