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Is the femoral nerve affected by iliopsoas block? A cadaveric volume study

Hip arthroplasty is an established treatment for end-stage osteoarthritis of the hip, femoral neck fractures, and femoral head necrosis. Nonetheless, patients undergoing hip arthroplasty frequently encounter moderate to severe postoperative pain. Compared to other postoperative pain management methods, such as systemic analgesia, traction, neurostimulation, and alternative medicine, peripheral nerve blockade has proven to be a more effective approach in the context of hip fracture perioperative analgesia. While lumbar plexus block, quadratus lumborum block, fascia iliaca compartment block, and femoral nerve block (FNB) provide significant analgesia, these techniques may also increase the risk of falls by weakening quadriceps muscle strength

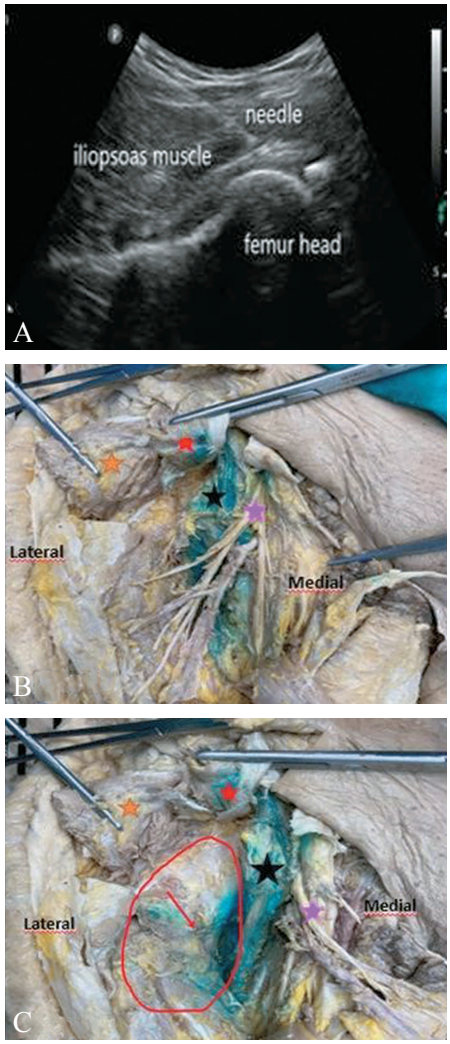

Figure 1.—Spread of methylene blue in the iliopsoas block. B) Square: m. tensor fascia lata; triangle: m. rectus femoris; circle: branches of n. femoralis, star: m. iliopsoas, C) square: m. tensor fascia lata; triangle: m. rectus femoris: circle: branches of n. femoralis: star: m. iliopsoas; circled area: joint; arrow: medial part of the joint.

(Figure 1).[1, 2] The iliopsoas plane block (IPB), as described by Nielsen *et al.*,[3] is a motor function-preserving block technique targeting only the sensory branches within the hip joint. However, Wang *et al.*[1] noted in their case series that although they did not observe significant motor block with 10 mL of local anesthetic, they could not determine whether there was spread to the femoral nerve. To date, no study has examined the spread of local anesthetics using 10 mL in IPB. The objective of this study was to administer 10 mL of local anesthetic during IPB to examine its spread in the iliopsoas plane and evaluate its effect on the motor branches of the femoral nerve.

A single fresh-frozen cadaver was utilized for this study. The anatomical plane between the iliopsoas muscle and the iliofemoral ligament was approached under ultrasound guidance, as described by Nielsen *et al.*[3] Following confirmation of the block site with a 5 mL saline injection, the area was filled with a 10 mL methylene blue solution. Anatomical dissection was performed to evaluate the spread 20 minutes after injection. Dissection revealed staining of the anterior and posterior aspects of the iliopsoas muscle, the anteromedial part of the iliofemoral ligament, and the articular branches of the femoral and obturator nerves.

The study by Nielsen *et al.*,[3] which utilized a 5 mL dosage, was conducted on healthy volunteers, and thus may not be directly applicable to patients undergoing surgery. However, Wang *et al.*[4] investigated the postoperative analgesic effect of the iliopsoas plane block after total hip arthroplasty with 10 mL and found significant reductions in opioid consumption while preserving motor strength. In our study, the administration of 10 mL of local anesthetic did not result in spread to the femoral nerve, consistent with Wang *et al.*'s findings.[5] The use of IPB with 10 mL of local anesthetic appears to be a safe procedure. Nonetheless, further studies are necessary to evaluate its efficacy.

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"Deep rectus sheath block" or "anterior transversalis fascia block"? Investigating the mechanism of a novel ultrasound-guided technique

Recently, a group of anesthesiologists described the deep rectus sheath block (DRSb) as a modification of the rectus sheath block (RSb).[1] In the RSb, the local anesthetic is injected posterior to the rectus abdominis muscle and anterior to the posterior sheath in order to achieve the block of the anterior cutaneous branches. However, in DRSb the authors suggested the injection beneath the posterior rectus sheath and anterior to the peritoneum. The rationale for this injection site is justified by the innervation of the parietal peritoneum (PP), which the authors aimed to provide analgesia for. In fact, PP is a richly innervated structure receiving sensory branches from both somatic and visceral nerves from the lower intercostal nerves and the upper lumbar nerves.[2] Thus, injecting local anesthetic should block the perception of pain originating from the PP.

Moreover, the authors proposed that combining the transversus abdominis plane block (TAPb), which ad-