Analgesia for Foot and Ankle Surgery with Sciatic Nerve Block using Ultrasound Guidance: A Prospective Study of 200 Patients

Presenting:

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BACKGROUND:
Pain control after foot and ankle surgery continues to be problematic. Sciatic nerve block (SNB) at the popliteal fossa (PF) is commonly used to provide primary anesthesia or adjunctive analgesia following foot and ankle procedures. Current methods for SNB utilizing electrical nerve stimulation (NS) or mechanical paresthesia (MP) for needle positioning have been associated with ineffective or incomplete blocks and complications of nerve injury. Recently, high-resolution ultrasound (US) has been used for needle guidance as it allows accurate visualization of nerves, blood vessels, and fascial planes to provide optimal needle positioning. We prospectively evaluated two hundred consecutive patients undergoing foot and ankle procedures requiring pre-operative placement of single-shot or continuous sciatic nerve block injections at the PF using US guidance.

METHODS:
After institutional review board approval, we prospectively collected clinical outcome measures on 200 consecutive patients undergoing foot and ankle procedures considered for single injection or continuous SNB at the PF using 0.125% bupivicaine. Patients with pre-existing sensory or motor deficits were excluded. All patients had nerve blocks placed using US guidance, with the needle positioned medial to the sciatic nerve and in a fascial plane between the biceps femoris and the semimembranosus/semitendinosus muscles but without immediate proximity to the nerve. All blocks were performed with the patient awake.

Most patients underwent general anesthesia prior to the surgical procedure(s). A saphenous nerve block was added intra-operatively if indicated by the location of the surgical site. All patients were examined for motor weakness and sensory anesthesia pre-operatively, post-operatively, and at 10-14 days. Additionally, patients were advised to contact the surgeon and/or anesthesiologist if they experienced sensory or motor deficits beyond forty-eight hours after surgery. Success of the block (defined as sensory and motor blockade on examination), re-block rate, incidence of needle paresthesia, vessel puncture, injection site infection, and persistent neurologic deficits were recorded.

RESULTS:
The success rate for blocks placed using US guidance was 99%. No patient experienced needle paresthesia during block placement. There were no vessel punctures or intravascular injections in any patient. No patients experienced neurologic deficits or infection at the injection site. No patients required additional nerve blocks post-operatively due to inadequate analgesia. No patients had motor or sensory deficits lasting greater than 48 hours after surgery. There were no long-term nerve complications.

CONCLUSIONS:
As ambulatory foot and ankle surgery has become routine, effective post-operative analgesia is of paramount importance for patient comfort, reduction of hospital admissions for pain, and earlier post-operative rehabilitation. Ultrasound guided popliteal fossa blockade is a safe, reliable, and effective method for perioperative analgesia and can often be used as primary anesthesia in appropriate cases. Immediate proximity between the needle and the sciatic nerve does not appear to be necessary to achieve adequate analgesia provided that the needle is within the fascial plane. Further prospective
studies will determine whether this method improves patient satisfaction and clinical outcomes compared to other techniques.