

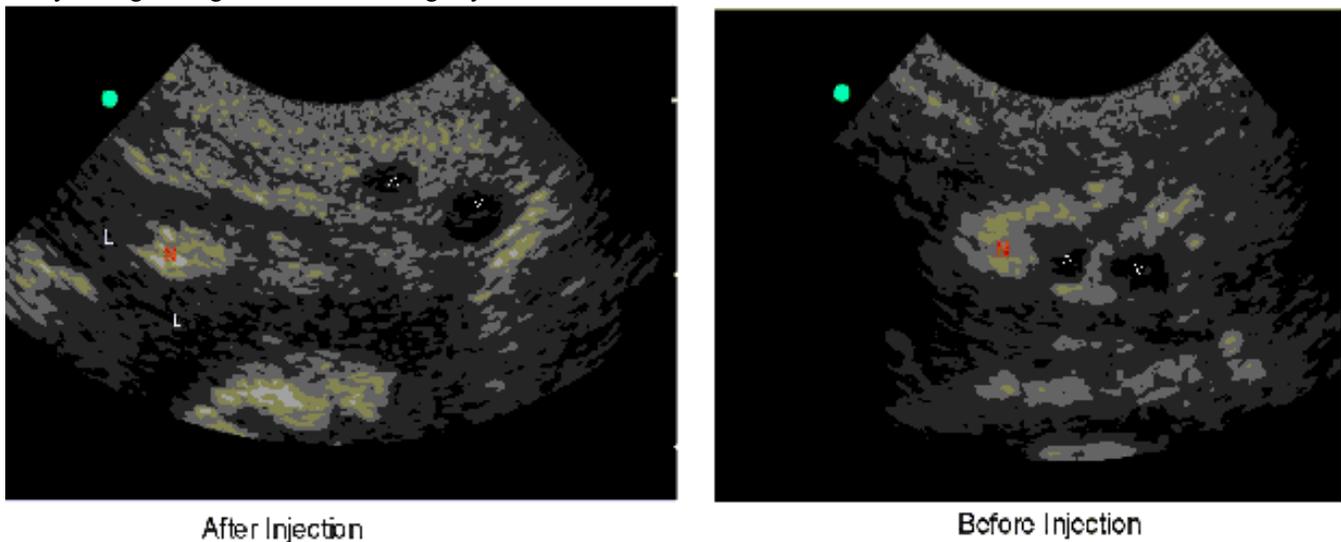
## Femoral Nerve Block in Children Aided and Confirmed by a Sonographic Approach: Two Case Reports

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**Introduction:** Ultrasound technology has been shown to aid in the practice of nerve blocks for both pediatric and adult patients (1,2). In these two case reports, we describe a technique for femoral nerve block where sonographic guidance was used to isolate the nerve and subsequently to confirm the presence of local anesthetic surrounding the nerve.

**Case Reports:** 1) A 25-month-old 14 Kg male with marked developmental delay and hypotonia was scheduled for a quadriceps muscle biopsy. After inhaled induction of anesthesia an intravenous catheter was placed and an infusion of propofol at 200mcg/kg/hour was started. A 2.5 LMA was inserted and he was positioned for surgery. A high-resolution ultrasound (180 plus, Sonosite®, C11 probe, 11 mm broadband curved array transducer with a frequency of 4-7 MHz, Bothell, WA) probe was used to isolate the femoral nerve from vascular structures in the groin. Under direct ultrasound visualization, a Stimuplex® insulated needle was inserted. Needle placement was confirmed by quadriceps “snap” at 0.3 mA. Nerve block was then performed with 11 cc of .25% bupivaine. After infusion, the nerve was noted to be surrounded by local anesthetic solution. (figure 1.) Patient was not given opiates during the procedure and had 480mg of acetaminophen rectally during the case. The operative course was uneventful and upon awakening he was found to have a dense nerve block in the distribution of the femoral nerve. No further pain medications were required. He received 3 subsequent acetaminophen doses orally during the night and the following day.



**Figure 1. View of Femoral Anatomy After and Before Nerve Block.**

N = femoral nerve, L = local anesthetic, A = femoral artery, V = femoral vein.

2) A 15-month-old 11kg female with a history of seizures and hypotonia was scheduled for a muscle biopsy of the quadriceps muscle. Anesthesia was induced with sevoflurane by mask. An intravenous catheter was placed and she subsequently received propofol at the rate of 190mcg/kg/minute. Acetaminophen 320mg was given rectally. After positioning supine, the femoral nerve was isolated as above and a Stimuplex® insulated needle was toward nerve under direct ultrasound visualization. Location was confirmed by quadriceps contraction at 0.4mA and 8 cc of 0.25% bupivacaine was infused. The procedure was started 10 minutes later and completed with propofol sedation and oxygen delivered by a simple mask. No further pain medication was required aside from 2 doses of oral acetaminophen the following day.

**Discussion:** Standard descriptions of pediatric femoral, three in one, and fascia iliaca nerve blocks include external anatomical landmarks in directing needle placement. Recent editorials in adult regional anesthesia and analgesia literature emphasize the use of ultrasound guidance for major conduction blockade. (3) We describe the application of sonographic technology to the placement and confirmation of pediatric femoral nerve blocks as the logical extension of this technique. Further refinement of this technique will take any “doubt” out of the placement and effectiveness of nerve blockade in children.

### References:

1. Gray AT et. al. *Anesth Analg.* 2003;97:1300-2
2. Sandhu NS et. al. *Br. J of Anaesthesia.* 2002, 89(2), 254-9
3. Greher M, Kapral S, *Anesthesiology* 2003 99(2) 250-1