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Continuous Femoral Nerve Block for Outpatient ACL Repair

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Regional anesthesia for postoperative pain relief facilitates recovery and discharge in the outpatient setting. Long acting local anesthetics can provide pain relief for 12-24 hours following arm and leg surgery, and allow for significant comfort on the first day following outpatient surgery (1). This analgesia can be prolonged by the insertion of continuous catheters in the vicinity of peripheral nerves, with both infraclavicular blocks and popliteal fossa blocks providing better pain relief and better sleep patterns for up to 72 hours following arm and foot surgery respectively (2,3). Femoral nerve catheters provide prolonged analgesia and enhanced rehabilitation following knee surgery on inpatients. We studied the feasibility of femoral nerve catheters following discharge after outpatient anterior cruciate ligament (ACL) repair.

Methods: Following institutional review board approval, 31 healthy (ASA 1-2) adults aged 17-70 were enrolled to receive a femoral nerve block (FNB) and insertion of a femoral nerve catheter following ACL repair with a patellar tendon autograft. Patients were randomized to receive a FNB with either 0.25% levobupivacaine (L) or 0.25% bupivacaine (B). On the day following surgery, they initiated an infusion at 10 cc per hour of either normal saline, 0.125% bupivacaine, or 0.125% levobupivacaine. The patients and the anesthesiologist performing the block were blinded to the choice of drugs, both for the initial block and for the infusions. All patients were scored on a verbal analog pain scale for their pain relief and opioid consumption at the time of discharge and at 4-hour intervals after discharge. Patients were followed with phone calls twice a day by one of the investigators, and were given a phone number that they could call at any time.

Results: All but one of the initial blocks produced excellent analgesia prior to discharge home. This patient was withdrawn from the study and given a standard femoral nerve block. There were no technical problems with the pumps or with the catheters themselves. There were no infections or hematomas associated with the use of the catheter, nor any persistent neuropathy following any of the infusions. One patient suffered a fall at home because of weakness in the quadriceps muscles.

All patients reported adequate pain control with the use of multimodal therapy (cryotherapy, ibuprofen, oral opioids as needed). Patients receiving local anesthesia in their infusions (n= 16) used half as many opioid tablets (avg. 3.6 vs 7.2, p= 0.14) compared to those receiving saline (n=14). Nine patients in the LA group used no opioids compared to 5 in the saline group.

Discussion:

- 1) it is technically possible and practical to place femoral nerve catheters and discharge patients home with continuous infusions for at least 48 hours following ACL repair.
- 2) there were no complications related to infection or local anesthetic toxicity
- 3) we could detect no difference in the pain relief between B and L groups
- 4) in this patient population receiving multimodal aggressive analgesic therapy, there was a trend to lower opioid analgesic consumption in the patients receiving local anesthetic infusions. While several of the patients who received local anesthetics reported delightful and enthusiastic subjective relief of pain, there was a wide variability in the perception of pain and in the use of oral analgesics which made the differences between the groups statistically equivalent. It may require a larger study group or a longer infusion time in order to demonstrate a statistically significant difference. Further study is required to substantiate an economic or sociological benefit that would justify the increased work load and cost associated with the insertion of femoral nerve catheters.

1. Mulroy, RAPM 2001;26:24-9.

2. Ilfeld, Anesthesiology. 2002 97:959-65.

3. Ilfeld, Anesthesiology. 2002 96:1297-304.

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