

PD-2. POST-OPERATIVE ANALGESIA FOR A TOTAL KNEE ARTHROPLASTY USING CONTINUOUS FEMORAL AND SCIATIC NERVE INFUSION CATHETERS

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This report illustrates the use of continuous local anesthetic infusions through femoral and sciatic nerve catheters for post-operative analgesia after a total knee arthroplasty.

A 19 year-old female patient with a history of juvenile rheumatoid arthritis was scheduled for a right total knee arthroplasty. A general anesthetic was planned for the surgery. Dual femoral and sciatic nerve catheters were placed for post-operative analgesia. After a standard institutional informed consent, standard ASA monitors were applied. The patient was sedated with Midazolam 1mg and Fentanyl 50mcg. The patient was positioned supine and the right groin was prepped with betadine and left to dry. After sterile draping, 1cc of lidocaine 0.5% was infiltrated just lateral to the femoral artery. An 18G insulated Tuohy needle (Neuro-trace, HDC)was connected to a nerve stimulator .The nerve stimulator was set at 2mA at 2Hz. The contraction of the quadriceps muscles was noted and the current was reduced gradually as the needle was advanced until appropriate contraction was obtained at 0.4mA. The stylet was removed and after negative aspiration for blood a 30cc mixture of bupivacaine 0.125% (15cc) and mepivacaine 1.0% (15cc) with 1:200000 epinephrine was injected. Maintaining the same needle position, a 20G catheter was threaded upto 5cm. The Tuohy needle was withdrawn and the catheter was secured with steri-strips and covered by occlusive dressing.

The patient was then placed in the left lateral position and the landmarks for the sciatic nerve were identified and marked. Skin was prepped with betadine and left to dry. The needle insertion site was infiltrated with 1cc lidocaine 0.5%. An insulated 18G Tuohy needle (Neuro-trace, HDC) was connected to a nerve stimulator. The nerve stimulator was set at 2mA at 2Hz. The contraction of the gastrocnemius muscle was noted and the current was reduced gradually as the needle was advanced until appropriate contraction was obtained at 0.4mA. The stylet was removed and after negative aspiration for blood a 30cc mixture of bupivacaine 0.125% (15cc) and mepivacaine 1.0% (15cc) with 1:200000 epinephrine was injected. Maintaining the same needle position, a 20G catheter was threaded upto 5cm. The Tuohy needle was withdrawn and the catheter was secured with steri-strips and covered by occlusive dressing.

Successful neural blockade was documented ten minutes after placement with loss of knee extension and plantar flexion. The patient was taken to the OR and induced with Propofol 200mg IV to insert an LMA #3. The patient was maintained on spontaneous ventilation with a mixture of oxygen 40%, N₂O 60% and sevoflurane 0.4%. Surgery and recovery were uneventful with stable hemodynamics. Pain score was 4 out of 10 on a scale of 0 ñ 10 which required 20cc of lidocaine 1.5% through the femoral catheter and morphine 2mg to reduce the pain score to 0 out of 10. Infusion of ropivacaine 0.2% was started in the femoral catheter at 6cc/h. and in the sciatic catheter at 4cc/h. A morphine IVPCA was used for back-up pain control of the other affected joints. Later, the femoral infusion was increased to 8cc/h. The infusion rates were chosen in order not to exceed the toxic dosage of the local anesthetic.

On post-operative day one, the patient reported a 3/10 pain score. The total morphine used was 26mg during a 24 hour period (1.08 mg/h). Both catheter infusions and the IVPCA were stopped and the patient was switched to oral analgesics. Boluses of ropivacaine 0.2% were infused, 10cc through the femoral catheter and 5cc through the sciatic catheter 20 minutes prior to physical therapy.

On post-operative day two the patient reported a pain score of 2/10 and painless physical therapy sessions. Both her catheters were discontinued. The patient was discharged home on oral analgesics on the third post-operative day.

In the absence of a regional nerve block, major knee surgeries require large doses of narcotics for post-operative analgesia. This is associated with the untoward effects of narcotics (itching, nausea, drowsiness, etc.). A continuous femoral nerve catheter infusion of local anesthetic with a single injection of the sciatic nerve provides adequate analgesia along the femoral nerve distribution but a time-limited analgesia along the sciatic nerve distribution. On the other hand, a dual catheter technique has decreased the intra-operative and the post-operative analgesic requirements. This technique also improved patient compliance during physical therapy resulting in early ambulation. This patient outcome has encouraged us to employ this technique for major lower extremity surgeries.

Ambulatory surgery for multi-ligament knee reconstruction with continuous dual catheter peripheral nerve blockade

Stephen M. Klein MD, Roy A. Greengrass MD FRCPC, Stuart A. Grant MB CHB, Laurence D. Higgins MD, Karen C. Nielsen MD, Susan M. Steele MD. Can J Anesth 2001/ 48:4 / pp 375-378.