The role of adductor canal block in total knee replacement

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INTRODUCTION

- A total knee replacement is one of the most painful operations and good analgesia can often be difficult to achieve.
- We present the case of a patient who underwent a total knee replacement under spinal anaesthetic with intrathecal diamorphine combined with an adductor canal block.
- The adductor canal block involves injection of local anaesthetic into the adductor canal deep to the sartorius muscle. [1]

METHODS

- A 78-year old lady was scheduled for a right total knee replacement due to severe arthritis.
- She had a past medical history of morbid obesity with a BMI of 40kgm^2, and osteoarthritis.
- She was allergic to penicillin and only took calcium supplements. She was a non-smoker and drank no alcohol.
- Blood tests showed a normal full blood count, coagulation and renal profile. An electrocardiogram was also carried out and showed normal sinus rhythm with no other abnormalities.
- She was given a spinal anaesthetic with 2.6ml of 0.5% hyperbaric bupivacaine with 300µg of spinal diamorphine.
- After the spinal was performed and confirmed to be working an adductor canal block was performed. This nerve block was performed using ultrasound guidance with sonosite® S-nerve and a locoplex L.120mm nerve stimulator needle using an in-plane technique. 20ml of 0.375% levobupivacaine was injected. There was no blood aspirate and no resistance to injection and with no immediate complications.

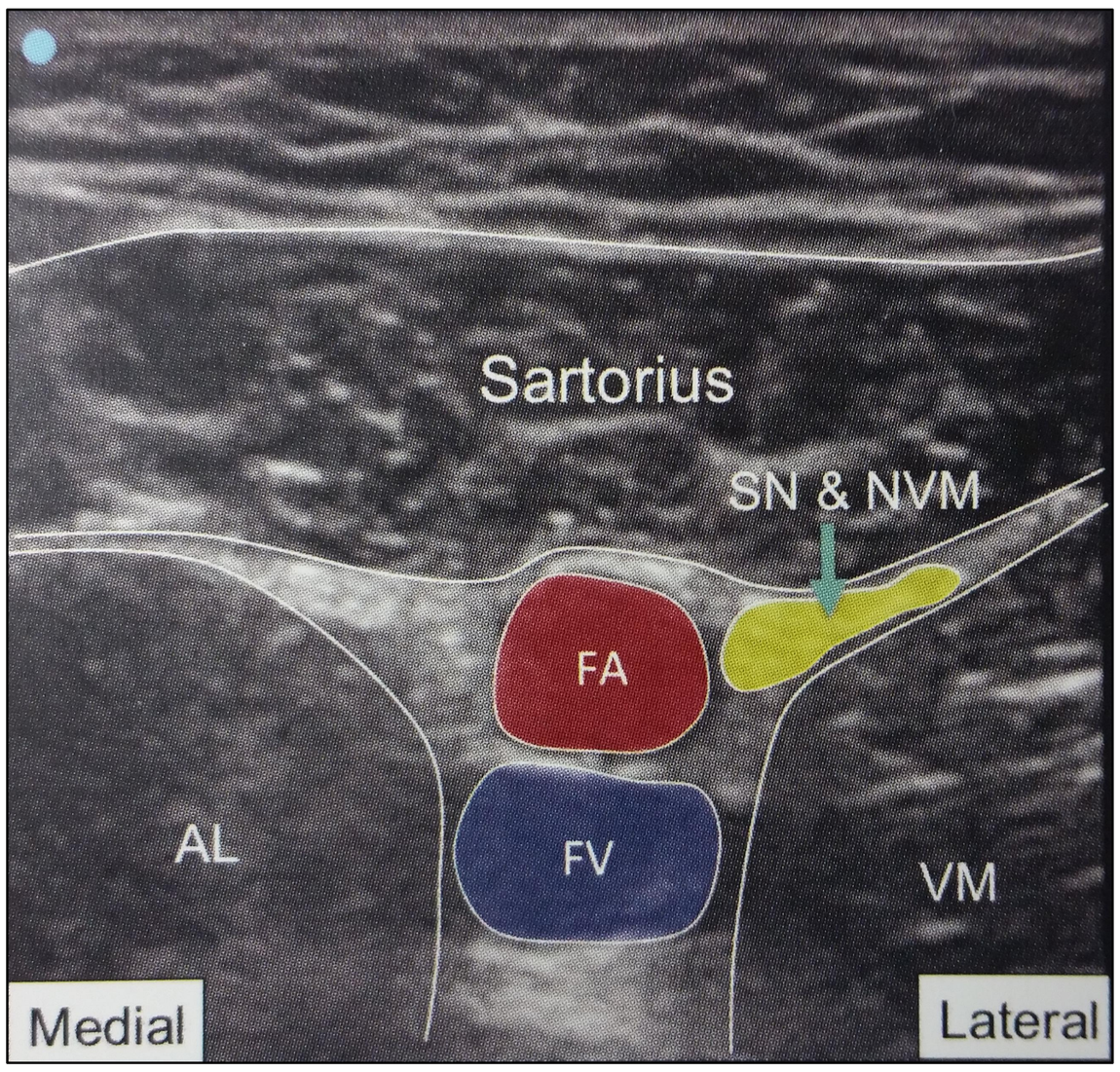

Figure 1 – Adductor canal (Reproduced from a pocket guide to ultrasound-guided regional anaesthesia)

RESULTS

- The operation was carried out successfully and the patient was taken to recovery and was pain free and comfortable.
- She was prescribed regular paracetamol and oral morphine as required and NSAIDs were avoided.
- She was reviewed twenty-four hours postoperatively and interviewed about her pain. She had been relatively pain free for 24 hours and was taking regularly paracetamol and had not required any opiates. She had also been able to mobilise on the first post-operative day without any motor weakness.

DISCUSSION

The most common nerve block for a total knee replacement is a femoral nerve block because the femoral nerve supplies most of the innervation to the anterior thigh and knee. Blockage of this nerve can provide good analgesia for femur and knee surgery. However fear of nerve injury, delayed mobilisation and high risk of falls due to quadriceps weakness have made this less attractive. Therefore there is a lot of interest in the adductor canal block of which the main nerve within the canal is the saphenous nerve.

The saphenous nerve is a purely sensory nerve which innervates the medial side of the lower leg including the foot. Blocking of this nerve may be useful for postoperative analgesia after knee surgery without significant motor block. [2][3] The saphenous nerve lies within the adductor canal, which is a triangular intermuscular tunnel in the middle of the thigh, and bounded by three muscles; vastus medialis (VM), sartorius and adductor longus (AL). The canal contains the femoral artery (FA), femoral vein (FV), posterior branch of obturator nerve, saphenous nerve (SN) and nerve to vastus medialis (NVM) (see figure 1).

CONCLUSION

- Pain control in total knee replacements can be a big problem
- Studies have shown adductor canal and femoral nerve block to be similar in analgesic efficacy [3]
- Spinal diamorphine provides good analgesia but duration is too short
- We believe that the addition of an adductor canal block to a spinal anaesthetic will significantly lengthen the analgesic duration, reduce opiate requirements and will not delay post-operative mobilisation

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