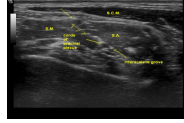


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Femoral nerve block

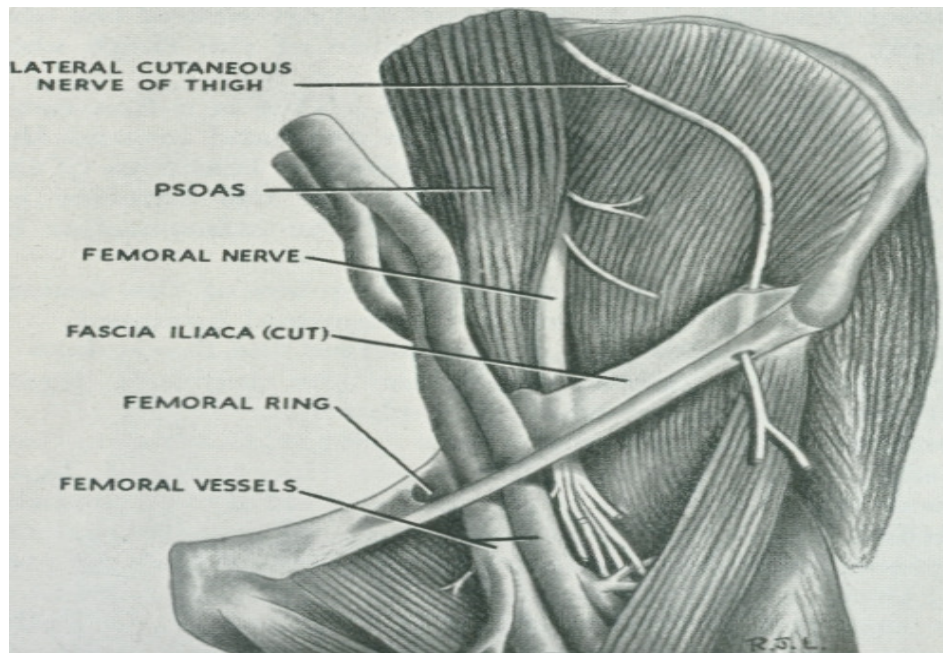
General difficulty rating: Easy-moderate depending on body habitus

Equipment:

- High to medium frequency probe (10-7.5MHz) as the nerve is usually 2-5cm deep to the skin
- 20-30mls of 0.25% bupivacaine should be sufficient for 12-16 hours analgesia.
- The use of a 18G 8cm Tuohy tipped epidural needle also will allow the placement of a catheter if necessary to achieve >24 hours analgesia

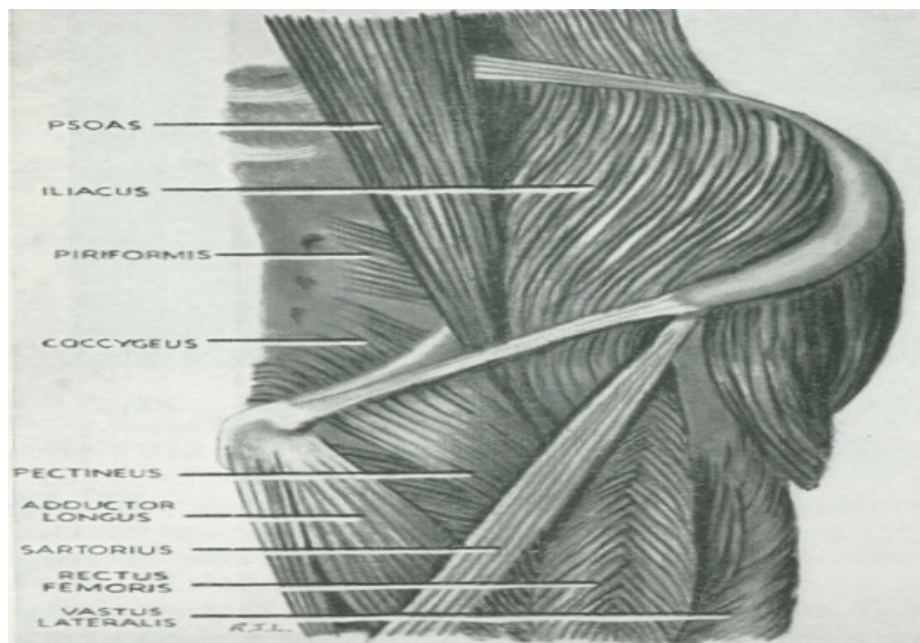
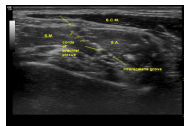
Summary of clinical anatomy:

The femoral nerve is formed in the body of the psoas muscle from the anterior primary rami of L2-4, inferiorly it lies on the surface of a groove between iliacus laterally and psoas medially. It is covered by the iliacus fascia which also covers the lateral cutaneous nerve of the thigh and separates both nerves from the femoral artery and vein. The femoral nerve passes under the inguinal ligament and quickly divides into multiple branches. The femoral nerve is therefore best visualised at or just below the inguinal ligament before it divides into its terminal branches.



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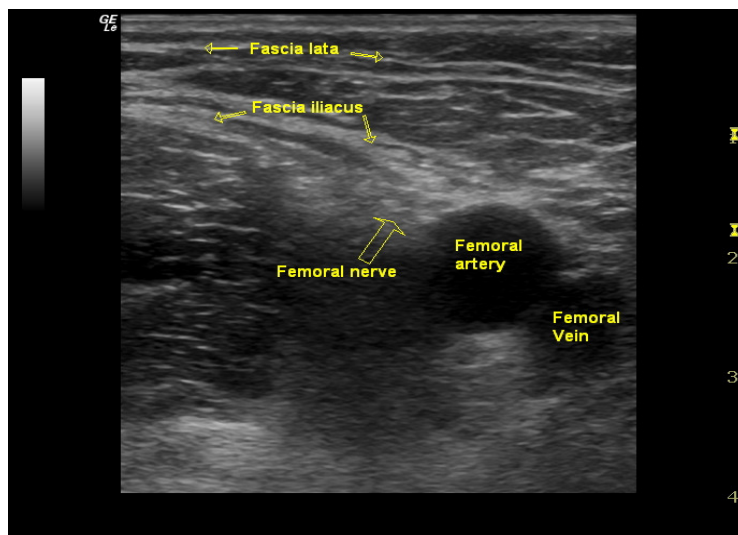
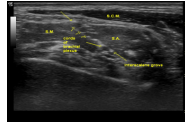
Adapted from 'Last's anatomy: regional and applied' 4th edition Churchill publishing pages 200 and 193

Method:

- Visualise the artery and vein and nerve in short axis at the level of the inguinal ligament by placing the probe parallel to the inguinal ligament and moving medially and laterally parallel to the ligament until the vessels are seen (*hint* the vessels are often more medial than expected).
- Identify and distinguish the femoral artery and vein by compression (veins will compress) and by looking for pulsation (*hint*: colour doppler may be useful here). The classical medial to lateral anatomical relationship (i.e. vein, artery and nerve medial to lateral) is frequently not found.
- Look lateral to the femoral artery for a triangular speckled structure.
- The fascia iliaca membrane can often be seen extending laterally at the level of the apex of the triangle of the femoral nerve and fascia lata may be identified deep to the fat and superficial fascia layer.
- Position the artery at the medial end of the image and advance the needle laterally to medially in as flat a trajectory as possible to ensure good needle visualisation as the needle is advanced to the lateral side of the nerve
- Two distinct losses of resistance will usually be felt as the fascia lata and then the fascia iliaca membrane are pierced
- Inject 1ml of local anaesthetic (using a 30 or 60 ml syringe), this should clearly be seen under the fascia iliaca ligament and as large volumes are injected it should be seen to 'tent the membrane' and not push the artery and nerve deeper into the tissues. If injection pushes the artery and vein deeper then advance the tip of the needle, avoiding the femoral nerve.
- Do not move the needle during injection and if any resistance to injection is encountered reposition the needle by withdrawing it.

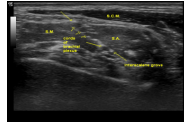
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End points/clinical pearls:

- Use a blunt needle to get tactile as well as visual information about the position of the needle.
- The volume of local anaesthetic is more important than the concentration. It is therefore best to use a volume of at least 20mls to ensure lateral cutaneous and possibly obturator nerve block
- Use a large syringe (30-50ml) to prevent the generation of high pressures during inadvertent intra-neuronal or intramuscular injection.
- Get image of femoral artery proximal to the profunda femoris branch for best images of whole femoral nerve before it branches.
- On local anaesthetic injection you may observe the femoral nerve splitting into its component branches.
- Nerve stimulators are not useful with the technique described above as the tip of the needle should not be closely associated with the nerve and the spread of the local anaesthetic it is the key factor which determines the success of the block.

