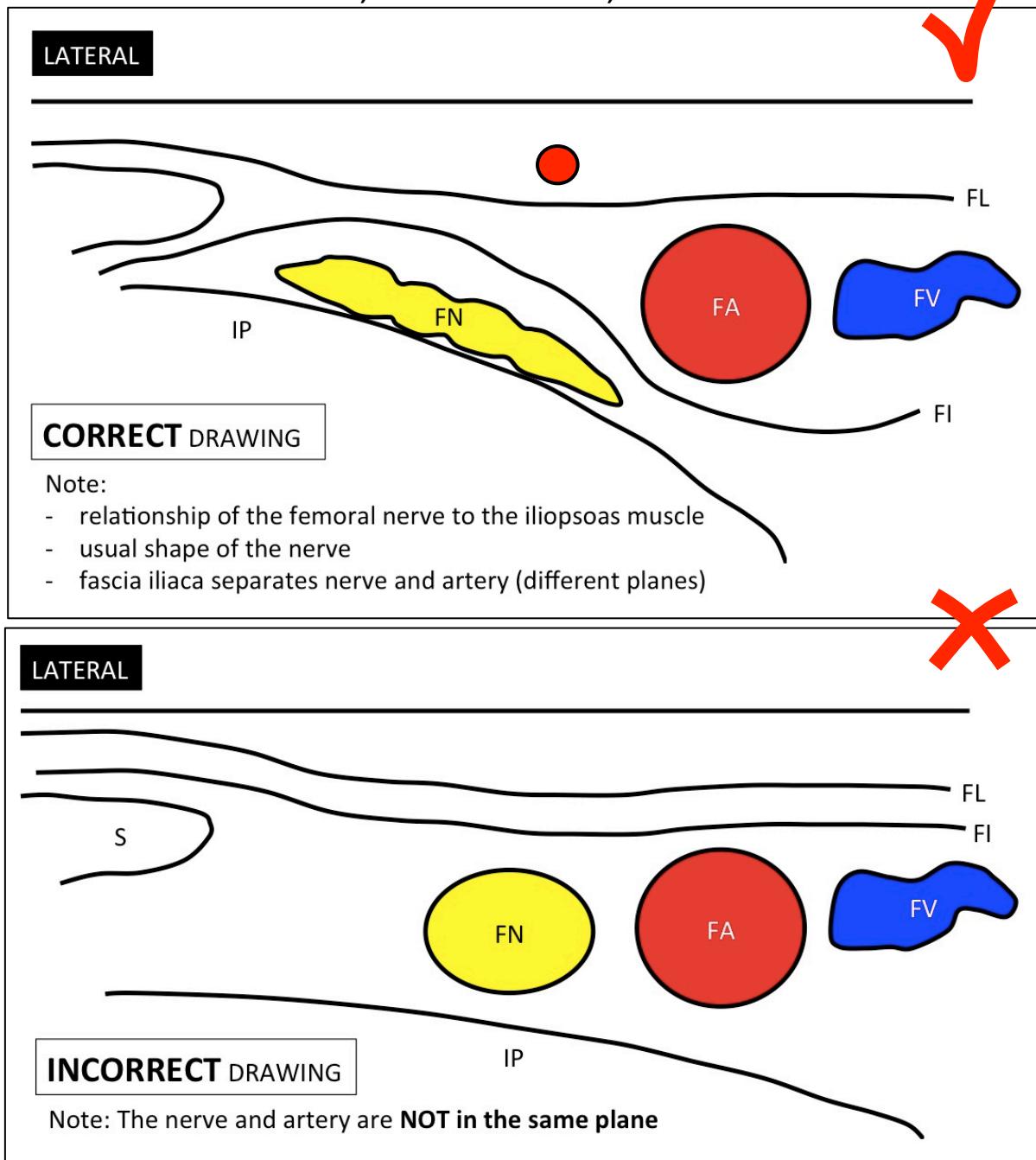


FEMORAL, FEMORAL TRIANGLE, ADDUCTOR CANAL BLOCK

Toolbox: online modules 6; RAP lecture 4; hands-on module 2

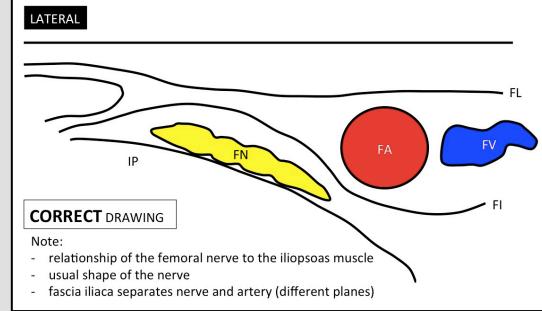


The fascia iliaca (FI) separates the femoral artery (FA) from the femoral nerve (FN). The femoral nerve is located on the iliopsoas (IP) muscle. Also seen are the femoral vein (FV) and sartorius (S) and fascia lata (FL).

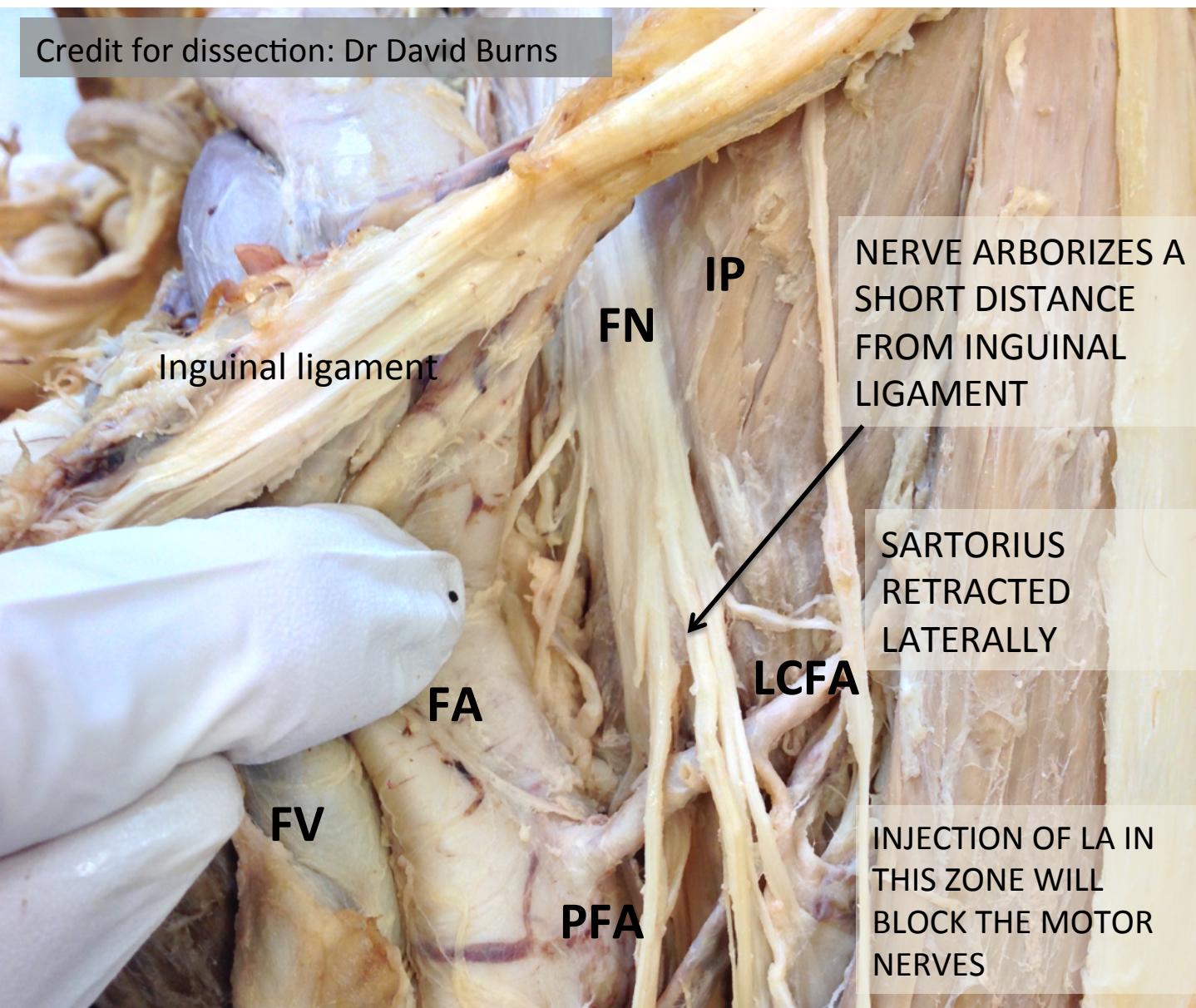
KEY STRUCTURES TO IMAGE

- ILIOPSOAS MUSCLE (IP)
- FASCIA ILIACA
- FASCIA LATA
- LATERAL CIRCUMFLEX FEMORAL ARTERY (LCFA)
- FEMORAL ARTERY (FA)/VEIN (FV)
- FEMORAL NERVE (FN)

TIP: IF PROFUNDA FEMORIS ARTERY (PFA) IMAGED THEN MOVE TRANSDUCER PROXIMAL TILL THERE IS ONE ARTERY



Credit for dissection: Dr David Burns



INDICATIONS FOR FEMORAL BLOCK

- Total knee arthroplasty
- Medial compartment arthroplasty
- ORIF femur (as high as neck of femur)
- Continuous passive movement following manipulation under anaesthesia
- Other moderate to highly invasive procedures of knee, anterior thigh, femur

Femoral triangle block is appropriate for ACL repair and total knee arthroplasty, many units prefer approaches distal to the femoral nerve for total knee arthroplasty

CONTRAINDICATIONS

- Avoid using concentrated long-acting local anesthetic if early ambulation or discharge is planned

SUGGESTED LOCAL ANESTHETIC DOSAGES

- Femoral block is commonly used for postoperative analgesia with goal of early ambulation, therefore 10-20 mL 0.2 % ropivacaine, followed by continuous infusion, (*refer to departmental clinical pathway*).

TRANSDUCER

- Intermediate frequency linear transducer is suitable in most circumstances.

NEEDLE 50 – 100 mm (depends on approach and trajectory)

Inguinal
crease

Sartorius

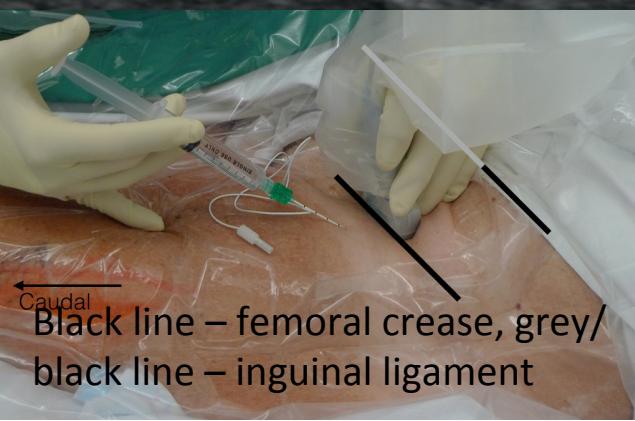
Iliopsoas

Femoral nerve

Inguinal
ligament

Iliopsoas

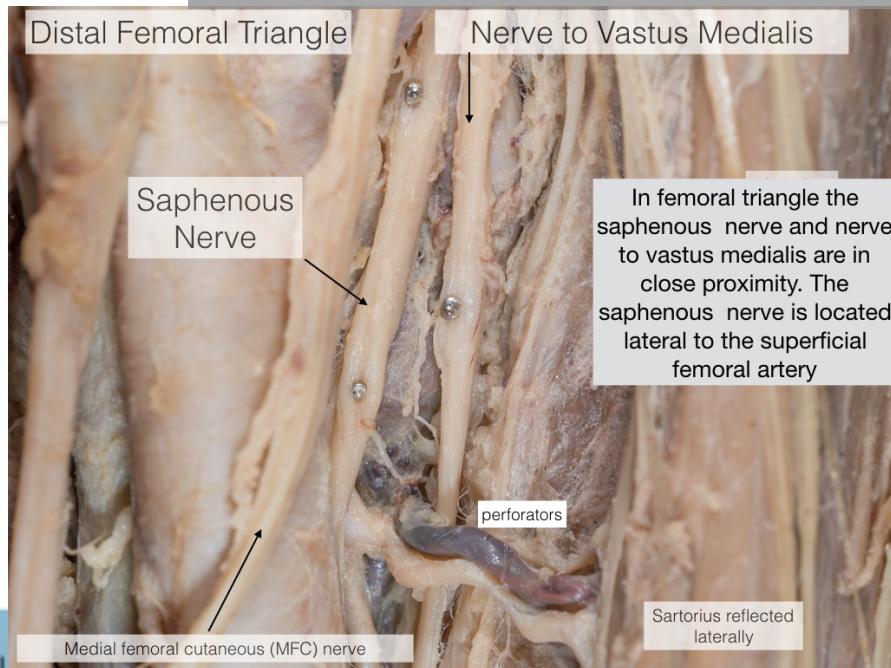
Femoral nerve



Femoral nerve image quality often improved at femoral crease compared to inguinal ligament

FEMORAL TRIANGLE BLOCK

Credit for dissection: Dr David Burns



Injection in proximal zone will likely result in motor block

Suitable injection zone proximal to apex of femoral triangle

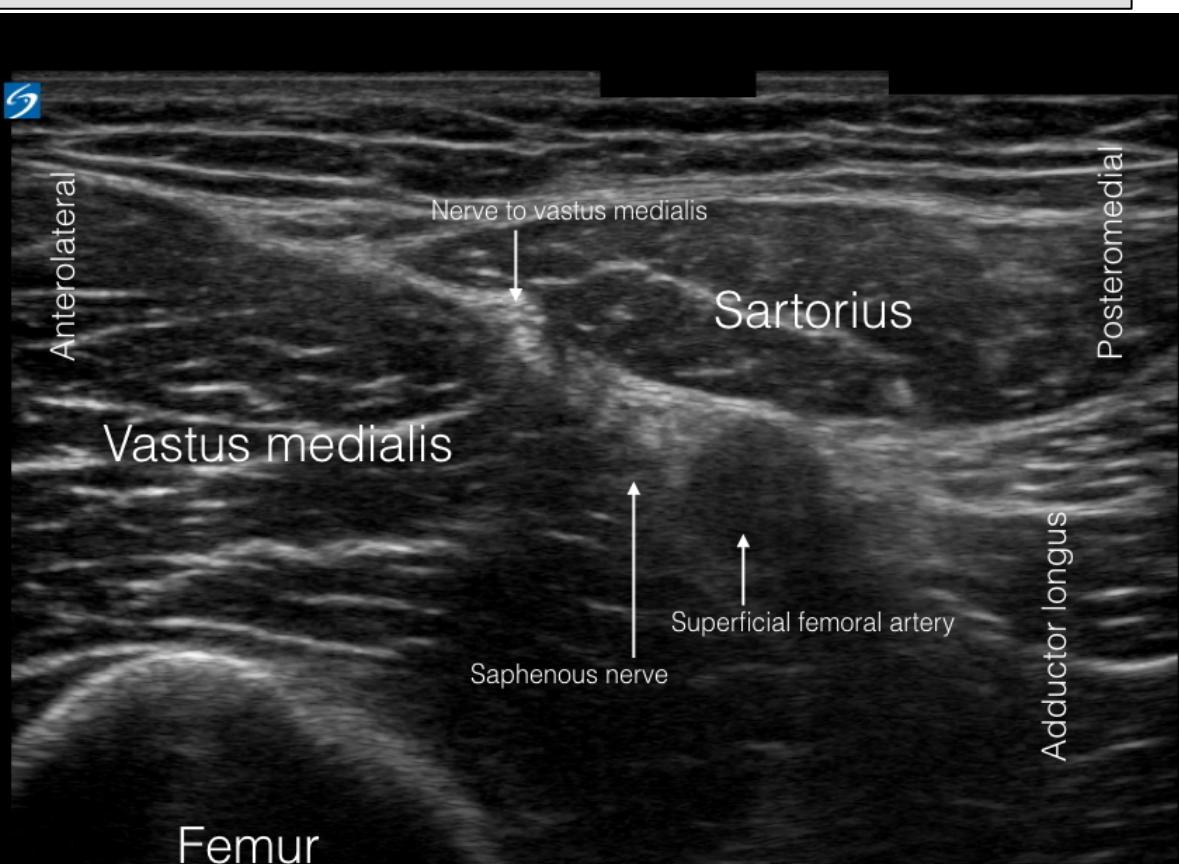
Distal injection into adductor canal, may miss nerve to vastus medialis

Main points

- The three main nerves responsible for innervation of the anteromedial knee: nerve to vastus medialis (NVM), medial femoral cutaneous and saphenous nerves are located in the femoral triangle
- The NVM likely has a separate pathway to the saphenous nerve which is located in the adductor canal
- NVM is responsible for much of the innervation of the anteromedial knee
- Many blocks described as 'adductor canal' blocks are likely 'femoral triangle' blocks

KEY STRUCTURES TO IMAGE

- VASTUS MEDIALIS MUSCLE
- SARTORIUS MUSCLE
- ADDUCTOR LONGUS
- SUPERFICIAL FEMORAL ARTERY (FA)/VEIN (FV)
- NERVES – NVM and saphenous can be difficult to image



This sonogram is taken just before the NVM dives into the vastus medialis



4.0 cm
2D: G: 50
DR: 0
MB

INDICATIONS

- Total knee arthroplasty
- Medial compartment arthroplasty
- ACL repair

SUGGESTED LOCAL ANESTHETIC DOSAGES

- 10-25 mL 0.2 – 0.5 % ropivacaine (*refer to departmental clinical pathway*); suitable for continuous LA infusion.

TRANSDUCER

- Intermediate frequency linear transducer often suitable, however the mid-thigh block is a deep target and a curvilinear transducer may be required .

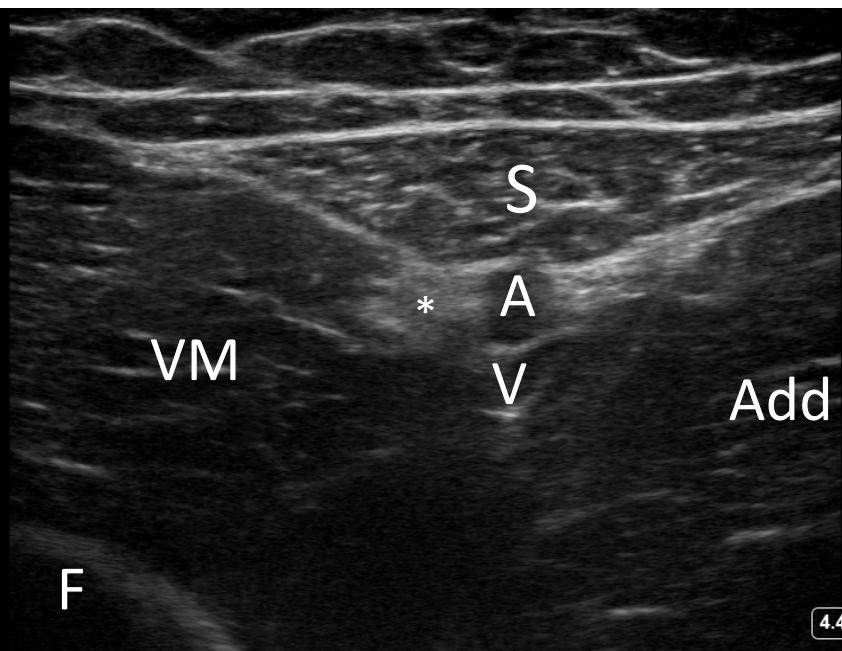
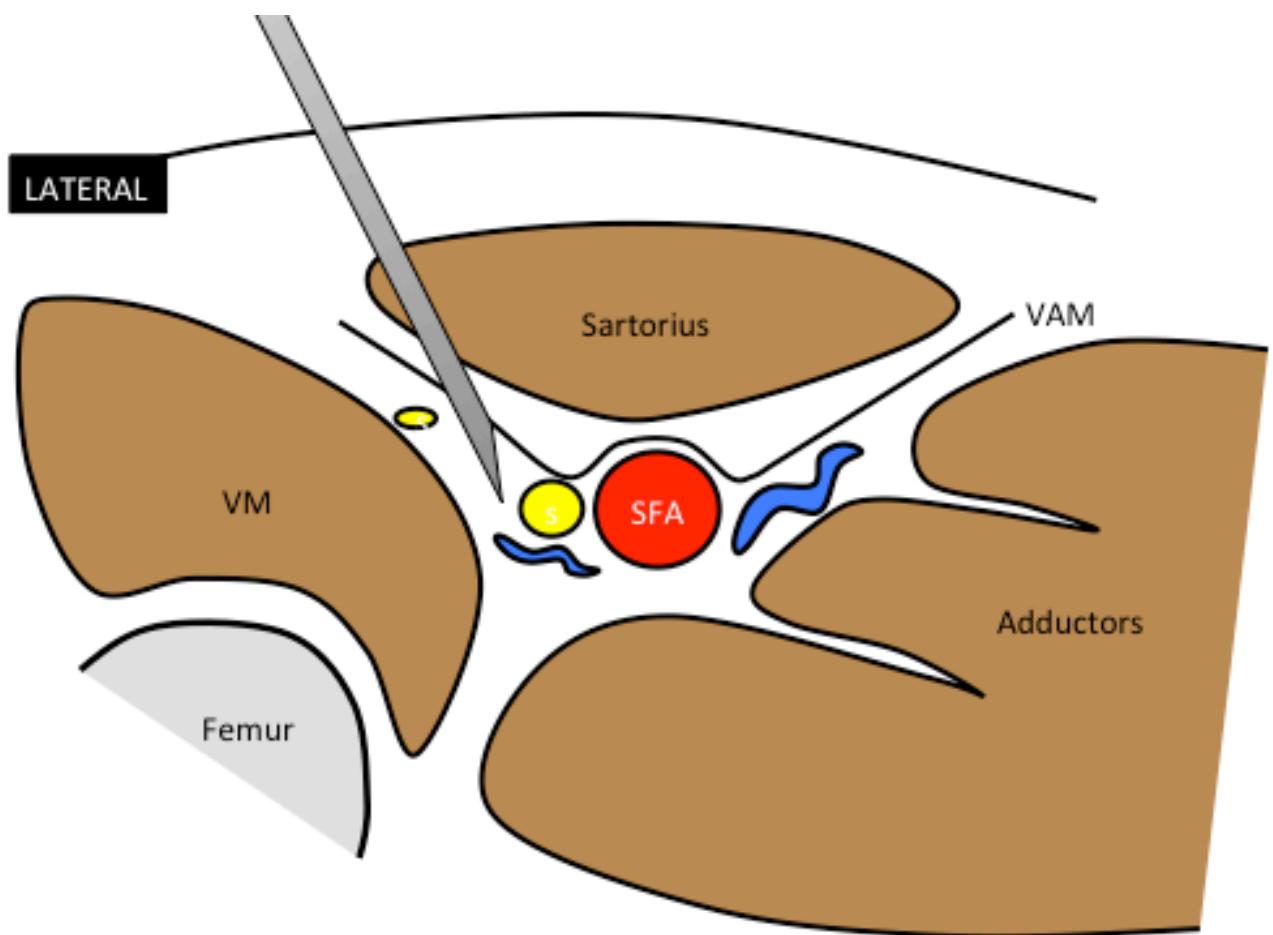
NEEDLE 100 - 150 mm (depends on patient size as depth appears to correlate and trajectory)

TIPS

- Nerve stimulation can be used to confirm location of nerve to vastus medialis
- Consider locating sonographically the apex of femoral triangle (where medial border of adductor longus crosses the medial border of adductor longus, perhaps inject slightly more proximal to this location)
- Hydrodissection may assist in identifying the targets

ADDUCTOR CANAL SCHEMATIC

Toolbox: online modules 6; RAP lecture 4; hands-on module 2



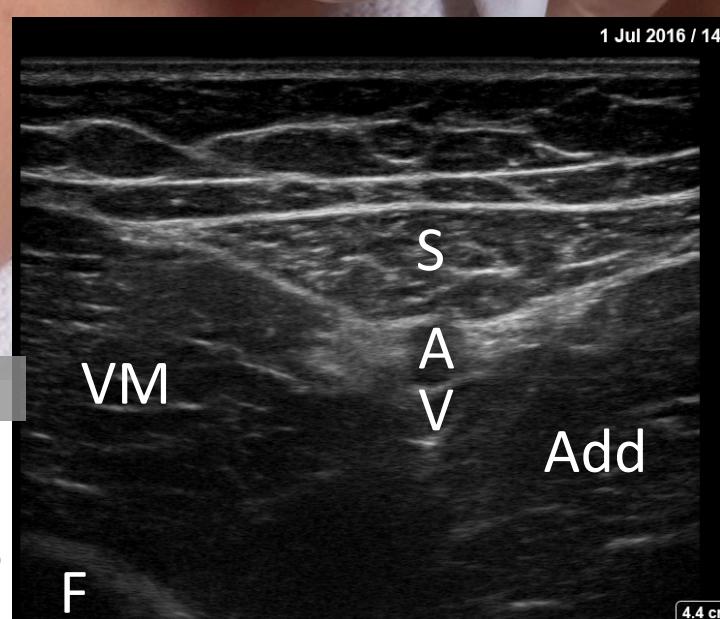
Sartorius (S), vastus medialis (VM), femur (F), adductor muscles (Add) and superficial femoral artery (A) and vein (V), region of saphenous nerve *, its position changes proximal to distal.

Sonogram obtained approximately midway along thigh, either in adductor canal or distal femoral triangle



Photo credit: Dr Rowan Thomas

Key structures: Sartorius (S), vastus medialis (VM), femur (F), adductor muscles (Add) and superficial femoral artery (A) and vein (V), region of saphenous nerve *, its position changes proximal to distal.



KEY STRUCTURES TO IMAGE

- SAPHENOUS NERVE
- SARTORIUS
- SUPERFICIAL FEMORAL VESSELS AND DESCENDING GENICULAR BRANCHES
- VASTUS MEDIALIS
- ADDUCTOR LONGUS/MAGNUS

INDICATIONS

- Major foot/ ankle surgery to cover medial foot to medial malleolus (*saphenous innervation extends to base of 1st metatarsal in small proportion*)
- Tibial surgery

SUGGESTED LOCAL ANESTHETIC DOSAGES

- 15-30 mL 0.375-0.5 % ropivacaine (postop analgesia)

TRANSDUCER

- intermediate frequency linear or curvilinear transducer

NEEDLE 100 mm

TIPS

- Spread of local anesthetic may highlight the saphenous nerve, which until then may be difficult to delineate
- Some practitioners deliberately inject LA into distal adductor canal (as artery 'dives deep' towards adductor hiatus) with intention of injecting spread to popliteal 'plexus' to cover posterior knee pain for joint replacement