



BLOCK GURU - Lower Limb

FASCIA ILIACA



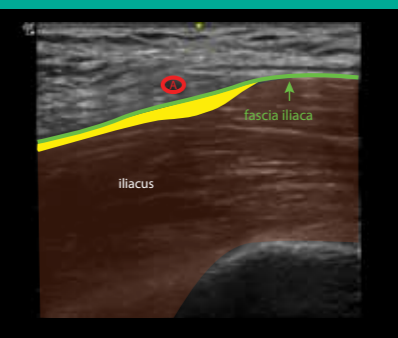
Fascia iliaca – fractured neck of femur, femoral shaft, hip surgery

Identify: Start with the probe in a sagittal plane just medial to the anterior superior iliac spine and slide medially; note the deep circumflex iliac artery (a branch of external iliac) which lies superficial to the fascia 1-2cm above the inguinal ligament and is a useful landmark

Target: Use an in-plane approach from the caudal end of the probe. The target is to deposit local anaesthetic on the belly of the iliacus muscle, beneath the fascia proximal to the inguinal ligament. Observe the spread of local anaesthetic proximally above the muscle and beneath the fascia (and clearly beneath the circumflex artery)

Tips: Lateral tilt of the probe may improve the view and an assistant may be required to retract the abdomen in an obese patient. This suprainguinal parasagittal view demonstrates the muscle & fascia passing deep into the pelvis - gravity aids the spread of LA towards the lumbar plexus (this approach is also suitable to catheter placement).

Avoid: Injection distal to the inguinal ligament



FEMORAL



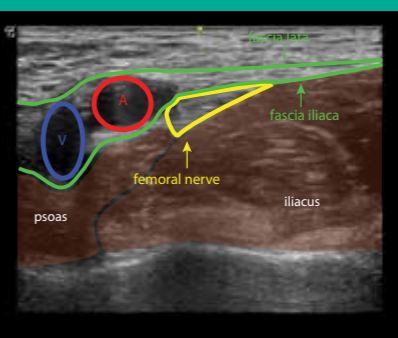
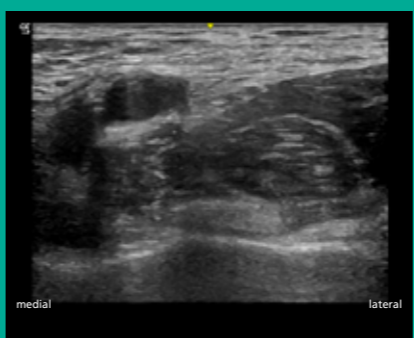
Femoral – femoral shaft, quadriceps mechanism, knee surgery

Identify: The femoral artery, iliacus and psoas muscles and fascia iliaca. Identify the indentation between the two components of iliopsoas. The nerve lies lateral to the artery, usually flattened between the fascia and muscle and it can take on a variety of shapes

Target: Using an in-plane approach from the lateral end of the probe, local anaesthetic injection must be beneath the fascia iliaca; ensure the spread of LA surrounds the nerve

Tips: Choose a proximal site before the nerve branches immediately below the inguinal ligament (if the femoral artery has divided then you are too distal). The nerve is usually more visible following injection of LA. Quadriceps weakness will affect active rehabilitation and mobility

Avoid: Superficial injection, distal injection, intravascular injection



ADDUCTOR CANAL



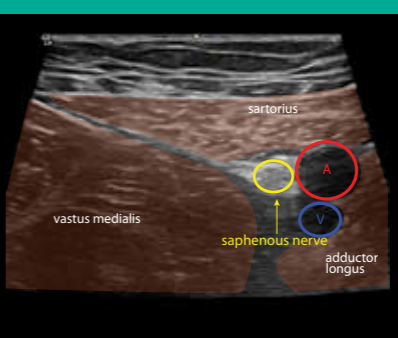
Adductor Canal – knee surgery, cruciate ligament repair, supplement to sciatic nerve block for distal lower limb surgery

Identify: The femoral artery beneath the sartorius muscle. The saphenous nerve lies in the same fascial plane, anterolateral to the artery, accompanied by the nerve to vastus medialis.

Target: Using an in-plane approach from the lateral end of the probe inject in the fascial plane alongside the femoral artery if the nerve itself is not clearly identified (it will be easier to see after injection)

Tips: If necessary trace the femoral artery down from the inguinal region to the medial thigh, especially in larger patients. The true adductor canal starts where the medial border of sartorius crosses the medial border of adductor longus. Above that level it is technically a femoral triangle block but the outcome is similar

Avoid: Intravascular injection, trauma to the nerve supplying vastus medialis



SUBGLUTEAL



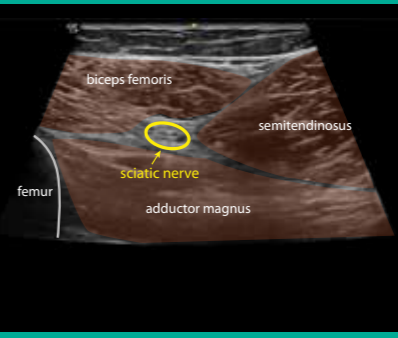
Subgluteal – a proximal approach to the sciatic nerve for surgery below the knee, an alternative to the popliteal approach when access is limited; the posterior cutaneous nerve of the thigh will not be blocked

Identify: At this level the sciatic nerve lies between biceps femoris laterally and semitendinosus medially. Deep to the nerve is the adductor magnus muscle and there is usually a clear fascial plane between this and the superficial muscles. The nerve is rarely round, more usually flattened or triangular in cross section

Target: Using an in-plane approach from the lateral end of the probe with a longer needle, aim for circumferential spread of LA around the sciatic nerve

Tips: Trace the nerve up from the popliteal fossa if necessary; tilt the probe to optimize visibility (anisotropy). Track the spread of LA proximally and distally to ensure complete coverage of the nerve. Block onset can be delayed due to the size of the target

Avoid: Check for arteries crossing obliquely deep to the sciatic nerve



POPLITEAL



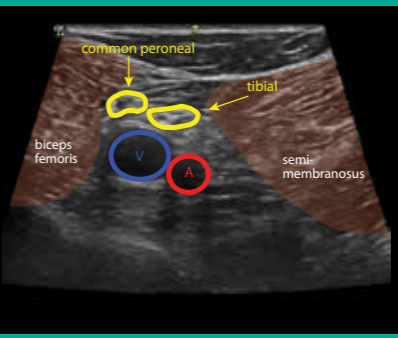
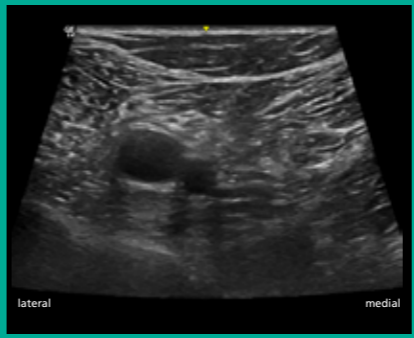
Popliteal – procedures of the leg, ankle and foot

Identify: At the level of the popliteal crease, identify the popliteal artery and vein. The larger tibial component lies just superficial to the vessels, the smaller common peroneal nerve will be lateral and more superficial. Scan up and down to find the point at which they join to form the sciatic nerve

Target: Inject between the two components at the point where they separate or target the two nerves individually more distally

Tips: Probe tilt is useful here to identify the nerves (anisotropy); ankle flexion & extension demonstrates the "see-saw" sign where the 2 components move around each other. Track the spread of local anaesthetic distally after injection to assess coverage of both nerves. The lateral decubitus position is shown here and is very stable but alternative positions are the prone or supine with leg elevation, depending on patient factors

Avoid: Inadequate needle length, direct nerve trauma, intravascular injection



OBTURATOR



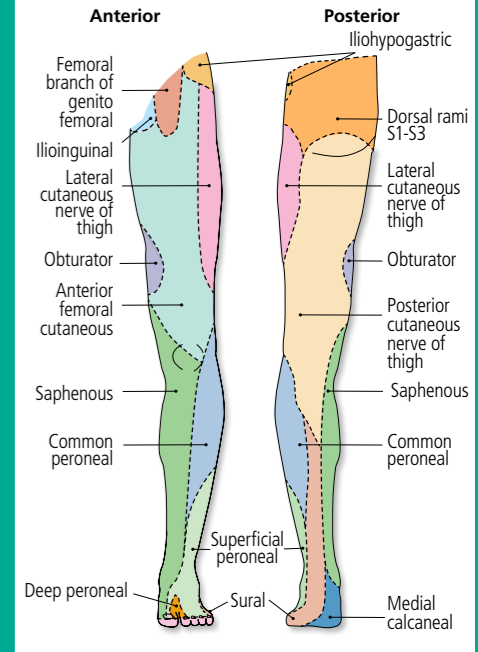
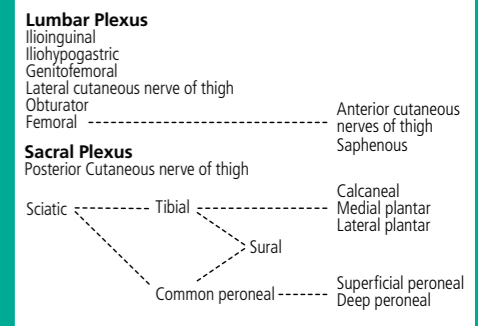
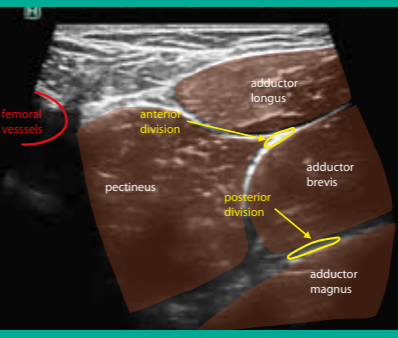
Obturator - supplement for hip, knee or bladder surgery

Identify: Identify the femoral artery, then slide the probe medially to locate the pectineus muscle and the 3 layers of adductor muscles (longus, brevis and magnus from superficial to deep). The anterior and posterior divisions of the nerve appear as hyperechoic structures in the intermuscular fascial planes as shown

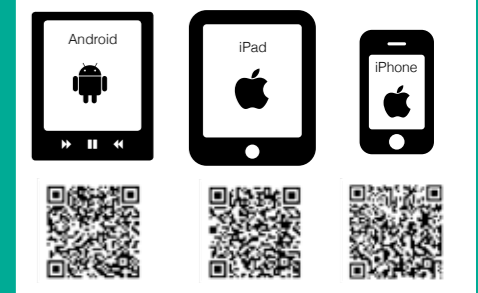
Target: Using an in-plane approach from the lateral end of the probe with a minimum 80mm echogenic needle, make an injection in the fascial plane for each division. The nerves will be more obvious following injection

Tips: Abduct and externally rotate the limb if possible. Probe tilt is useful to highlight the nerves. A linear ultrasound probe is sufficient but a curvilinear can be required for a large leg. A more proximal target can be achieved by tracking and tilting the probe in a cephalad direction - the divisions will unite deep to pectineus muscle and a single injection here will result in a complete block including the branches to the hip joint. The knee is supplied by the posterior division

Avoid: The needle entry point may overlie the femoral vessels, avoid puncturing them



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