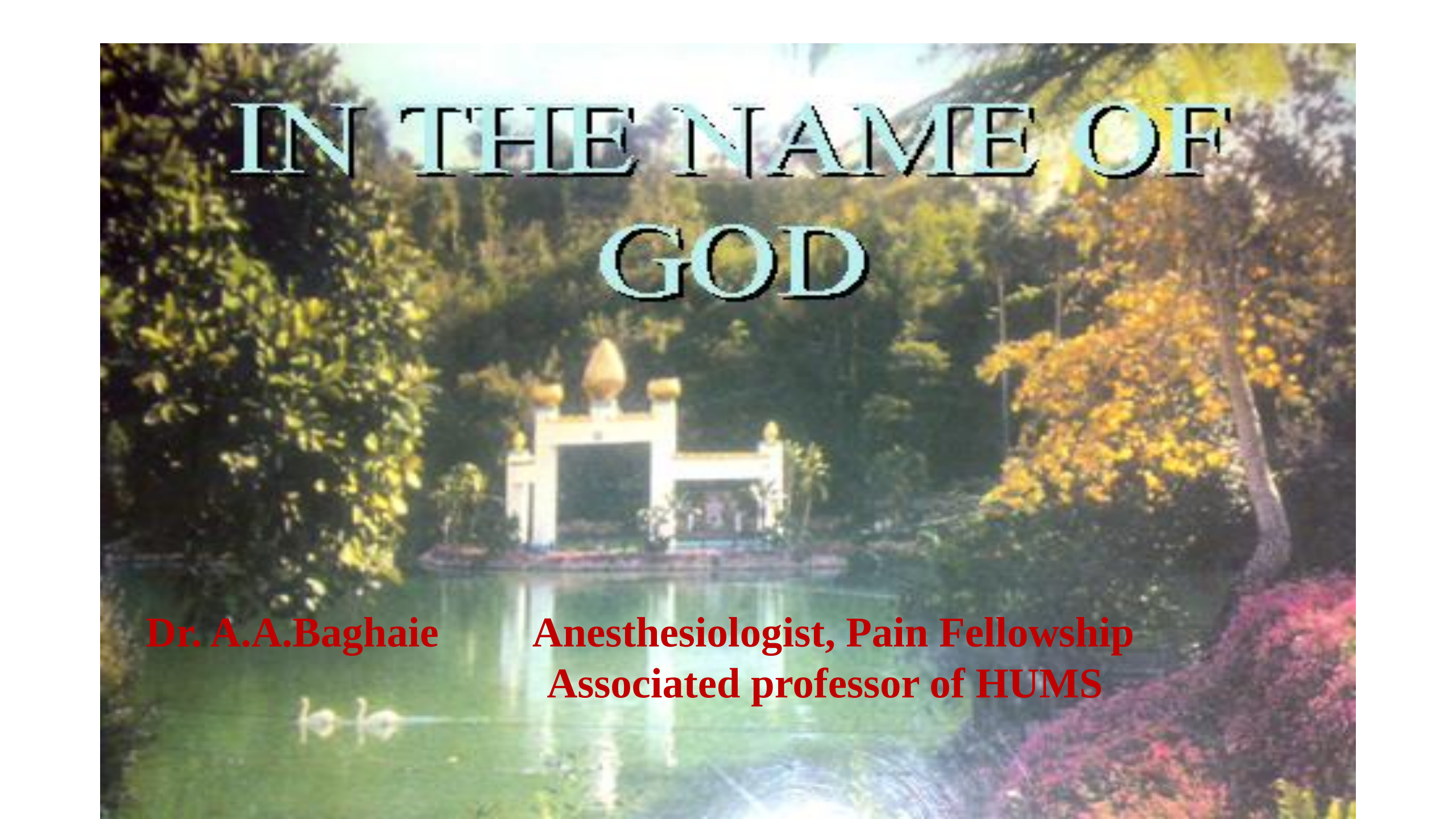




IN THE NAME OF GOD

Dr. A.A.Baghaie

**Anesthesiologist, Pain Fellowship
Associated professor of HUMS**



Figure 1-2 Leg amputation prior to introduction of general anesthesia. Artist unknown. (Reproduced with permission, Council of the Royal College of Surgeons of England.)

Chronic pain

May be elicited by an injury or disease but is likely to be
perpetuated by factors

Pain that extends beyond the expected period of healing
time 3-6 month since the initiation of pain (arbitrary)

Genetic factors, prior life experiences,
peripheral or central sensitization, environmental,
emotional and cognitive factors

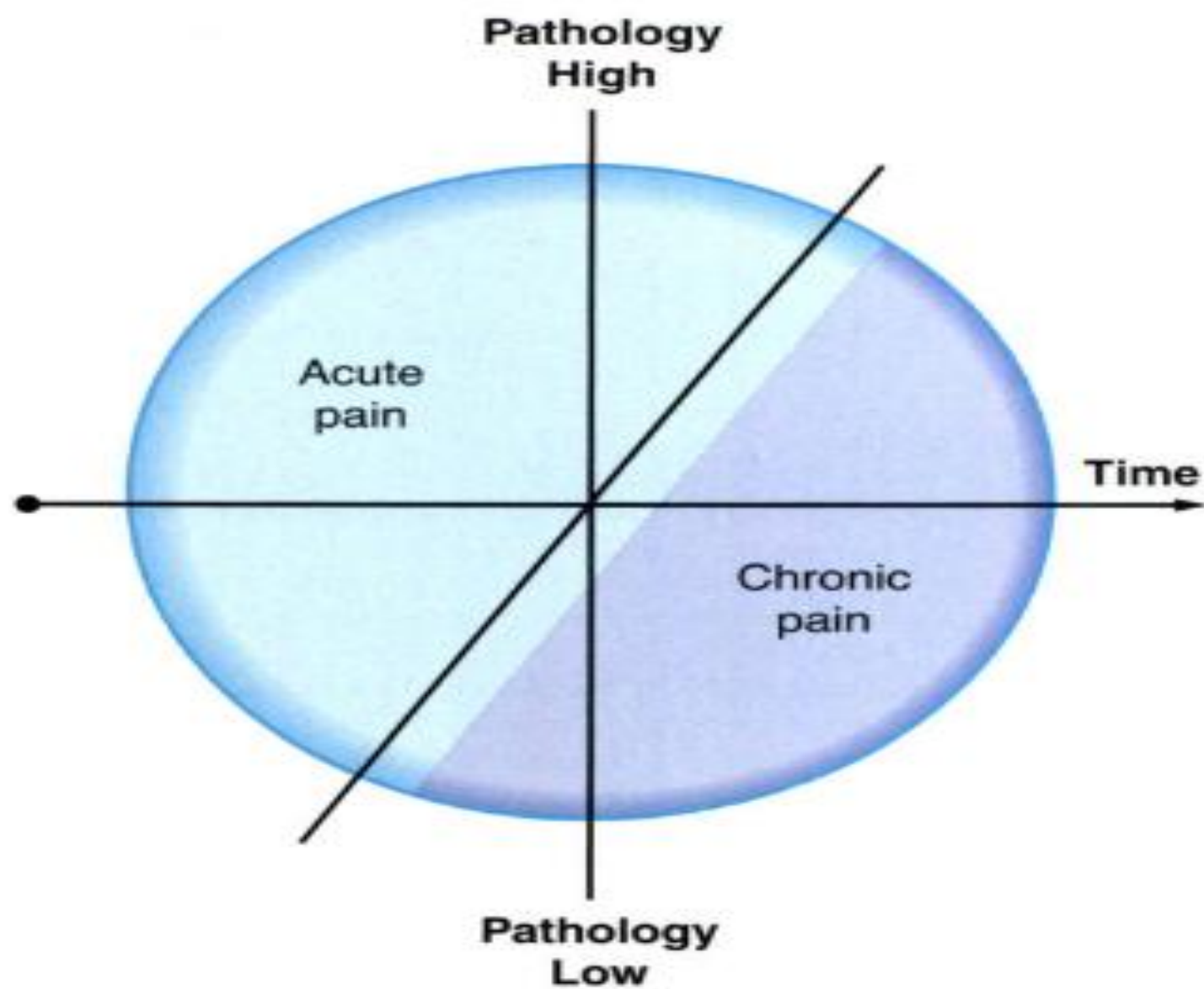


FIGURE 2.1 Pictorial representation of acute and chronic pain.



FIGURE 6.3 Schematic anatomical localization of cortical areas, which are regarded as important for pain processing. Somatosensory areas, which are responsible for sensory-discriminative pain processing such as intensity and stimulus decoding, are the primary (SI) and secondary somatosensory cortex (SII). Adjacent to SII is the insula (*Ins*), which belongs to the limbic system and is involved in emotional-affective pain processing. Other limbic structures include the cingulate gyrus with its subdivisions anterior cingulate cortex (ACC), midcingulate cortex (MCC), and posterior cingulate gyrus (PCC). Finally the prefrontal cortex (PFC) plays an important role in cognitive-evaluative pain processing especially for the organization of context-dependent pain behavior.

Persistent postoperative pain

Pain persisting 2 month after surgery
that can not be explained by other causes

Mastectomy 20-50%

Amputation 50-85%

Hysterectomy 5-30%

Cardiac surgery 30-55%

Hernia repair 5-35%

Thoracotomy 5-65%

and This is sever in 2-10%

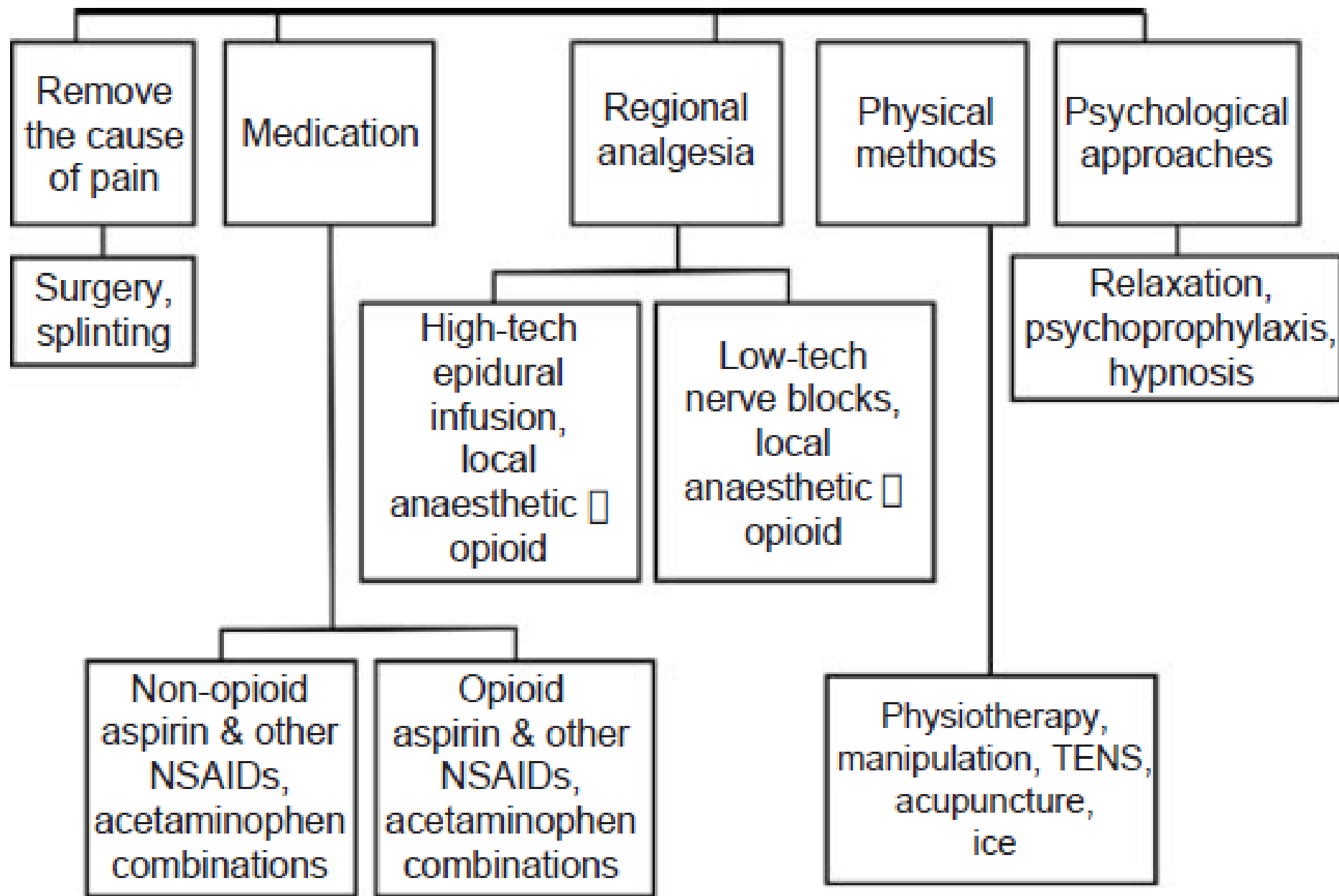
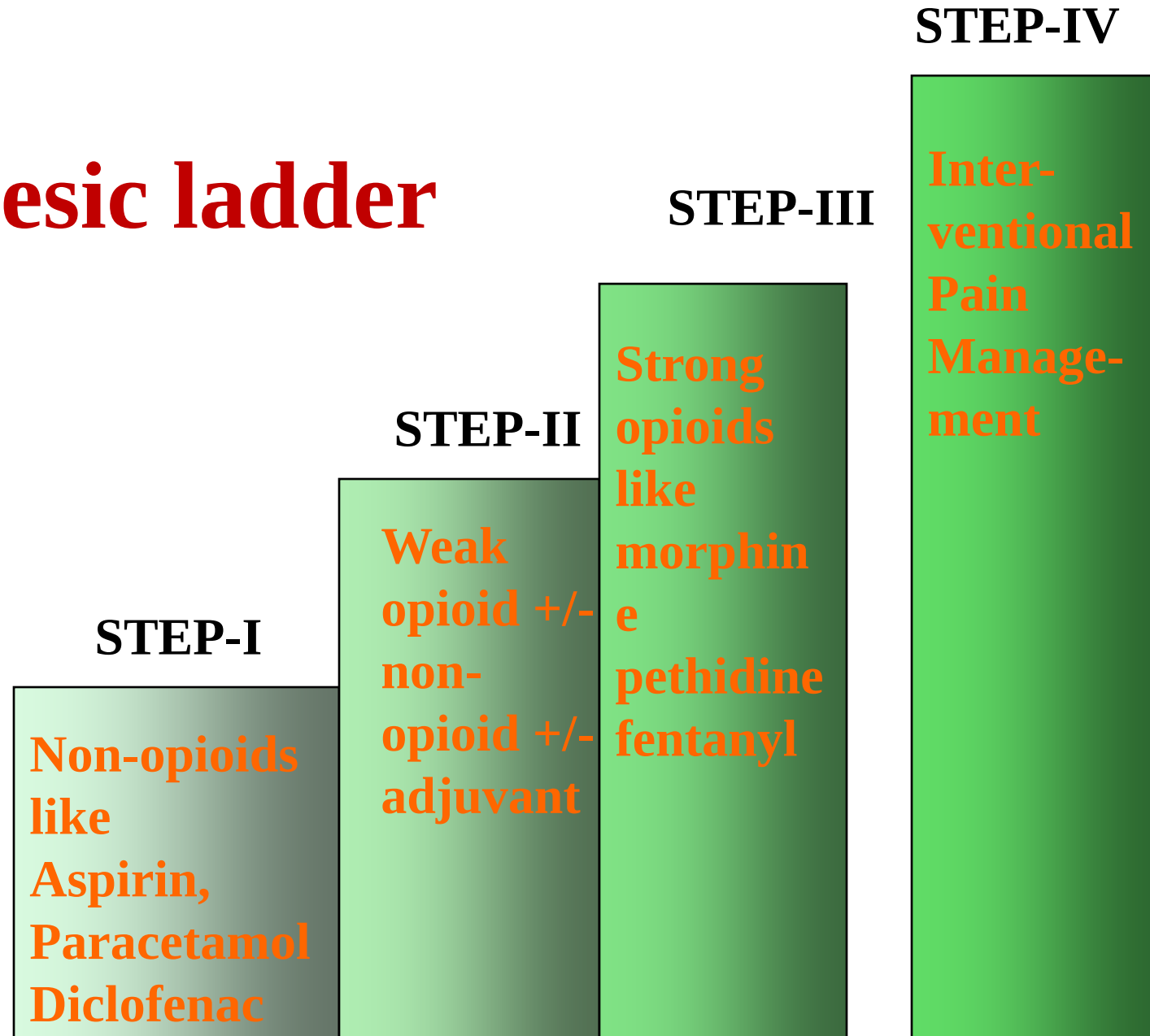


Figure E.1: The different options for acute pain management.

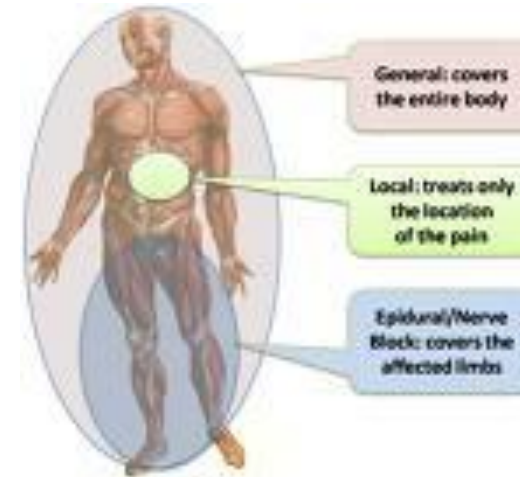
WHO analgesic ladder



Interventional pain management

Peripheral Nerve Blocks

Spinal, Epidural, CSE



PNB Techniques

- ☐ Anatomy
- ☐ Loss of resistance and tactile feedback
- ☐ Evoked paresthesia
- ☐ Nerve stimulator (goal 0.3-0.5 mA)
- ☐ Ultrasound guided
- ☐ Injection Pressure Control



Figure 18–5

The operating room to be used for kyphoplasty contains a radiolucent operating table and a high quality C-arm (fluoroscope), both of which are mandatory for maximal procedural safety. An anesthesia machine, monitoring devices, and equipment for cardiopulmonary resuscitation are also necessary for the patient's safety.

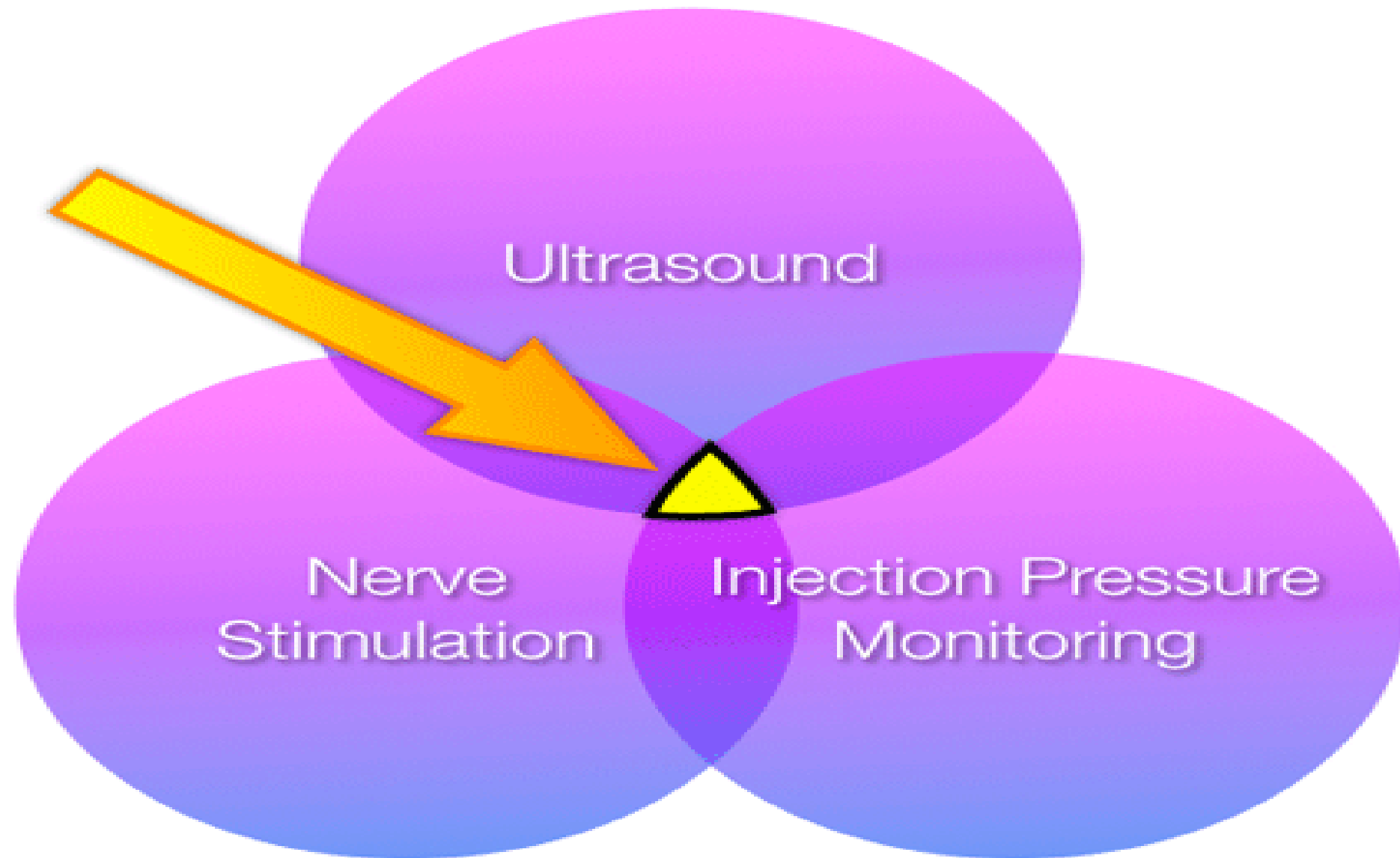


Figure 1. Three modes of monitoring peripheral nerve blocks for patient injury. The overlapping area of all three (yellow area) represents the safest means of performing a block.

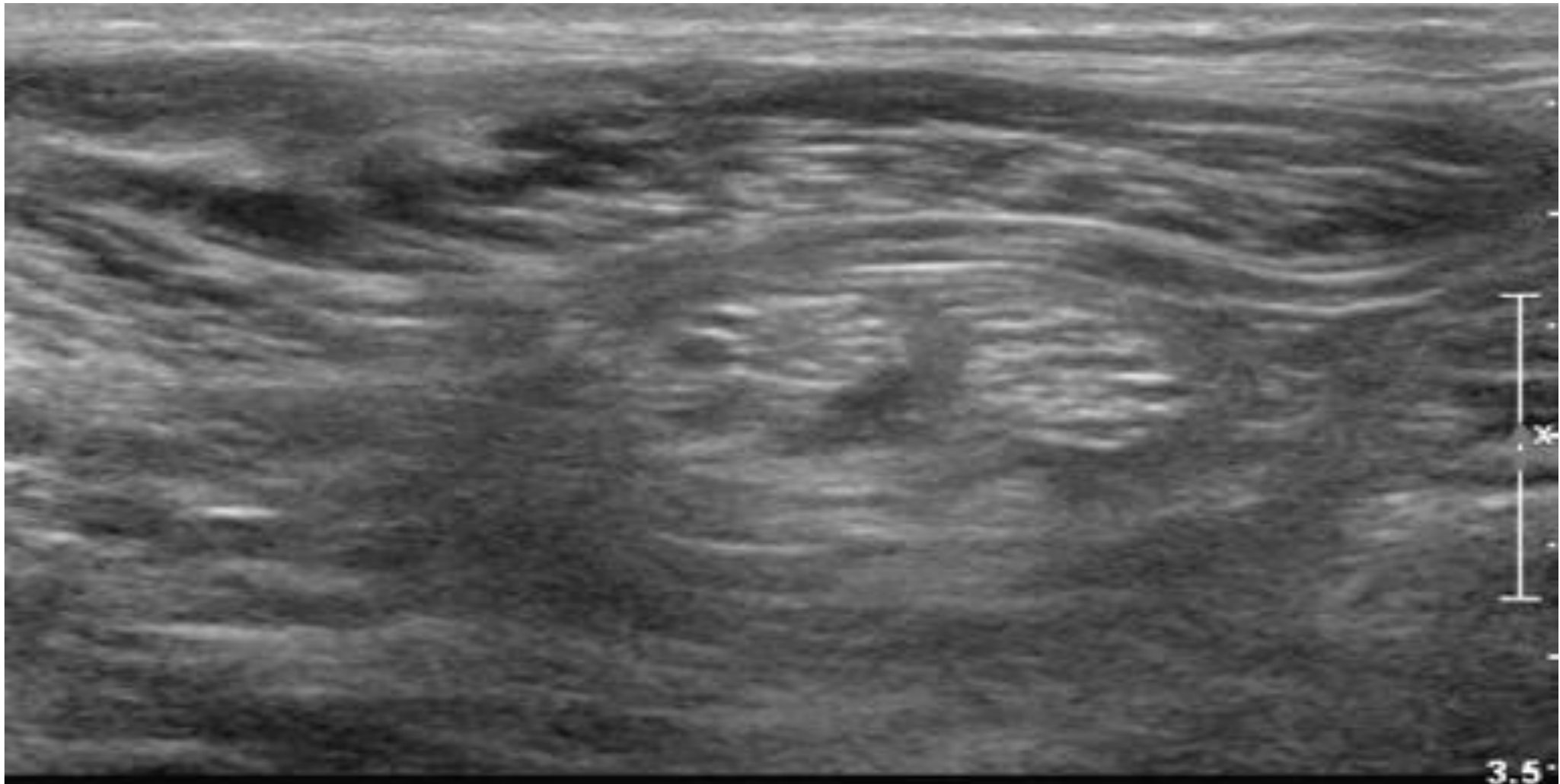
Nerve Stimulator



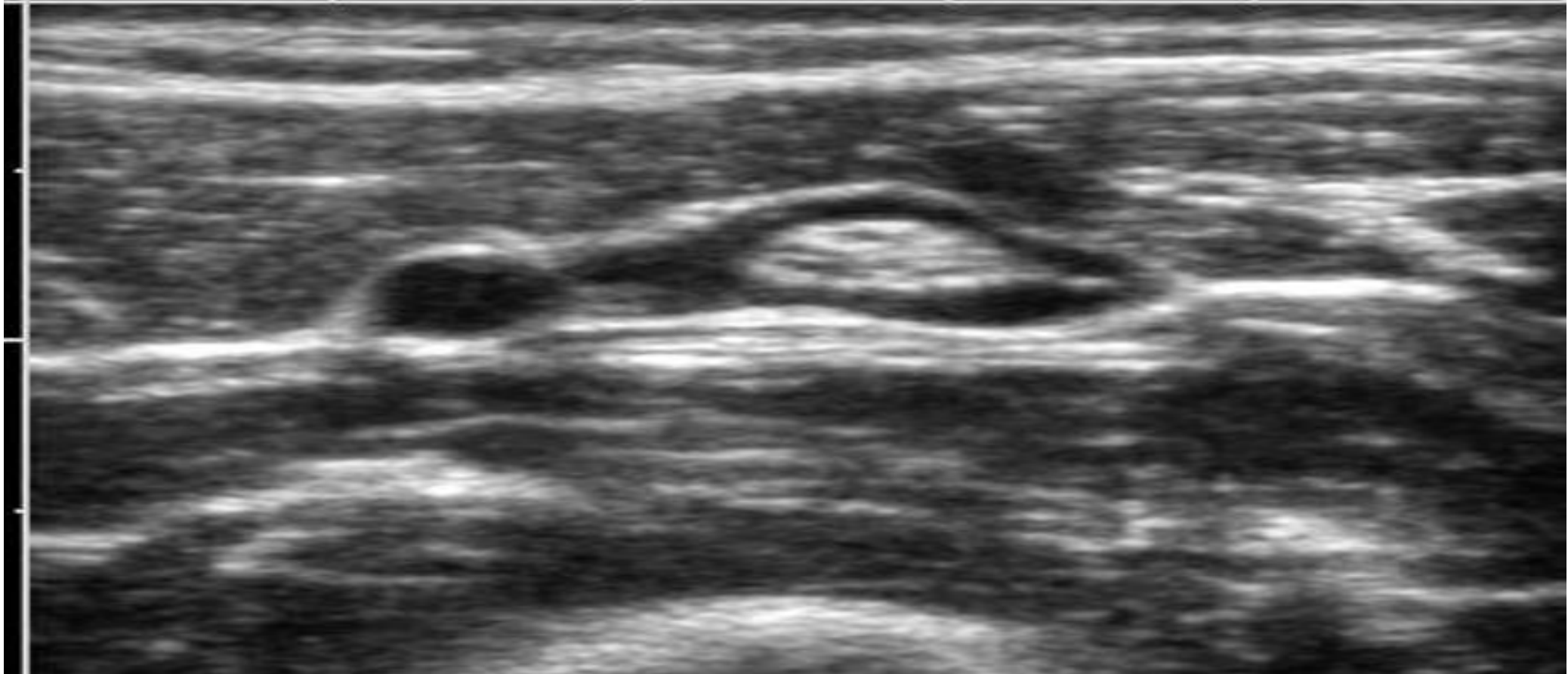




Nerve echo texture



Local Anesthetic injection





Contraindications

Needle phobia or otherwise uncooperative

Infection (local and untreated systemic)

Anticoagulation

Pre-existing nerve injury

Surgery specific (e.g. motor block and post-op neurological examination)

Block specific (e.g. pulmonary disease and interscalene block)

ASRA Recommendation

The American Society of Regional Anesthesia and Pain Medicine (ASRAPM) recommendations are based on labeling precautions and experiences

suggested time interval between discontinuation of anticoagulant therapy and neuraxial blockade

14 days for ticlopidine

7 days for clopidogrel (Plavix)

24 to 48 hours for abciximab (Reo-Pro)

4 to 8 hours for eptifibatide (Integrilin) and tirofiban (Aggrastat)

4 to 5 days for warfarin and INR less than 1.5 (1C)

ASRA Recommendation

Full Anticoagulation is contraindicated to Regional Techniques (1A)

Blood in Needle or Catheter: does not necessitate postponement of surgery , Only LMWH initiation must be 24 h after surgery (2C)

If LMWH Prophylaxis : Needle placement 12 h after last dose (1C)

Needle placement 24 h after last dose (1C) If LMWH Treatment :

Catheter Removal : 12 h after last dose of LMWH

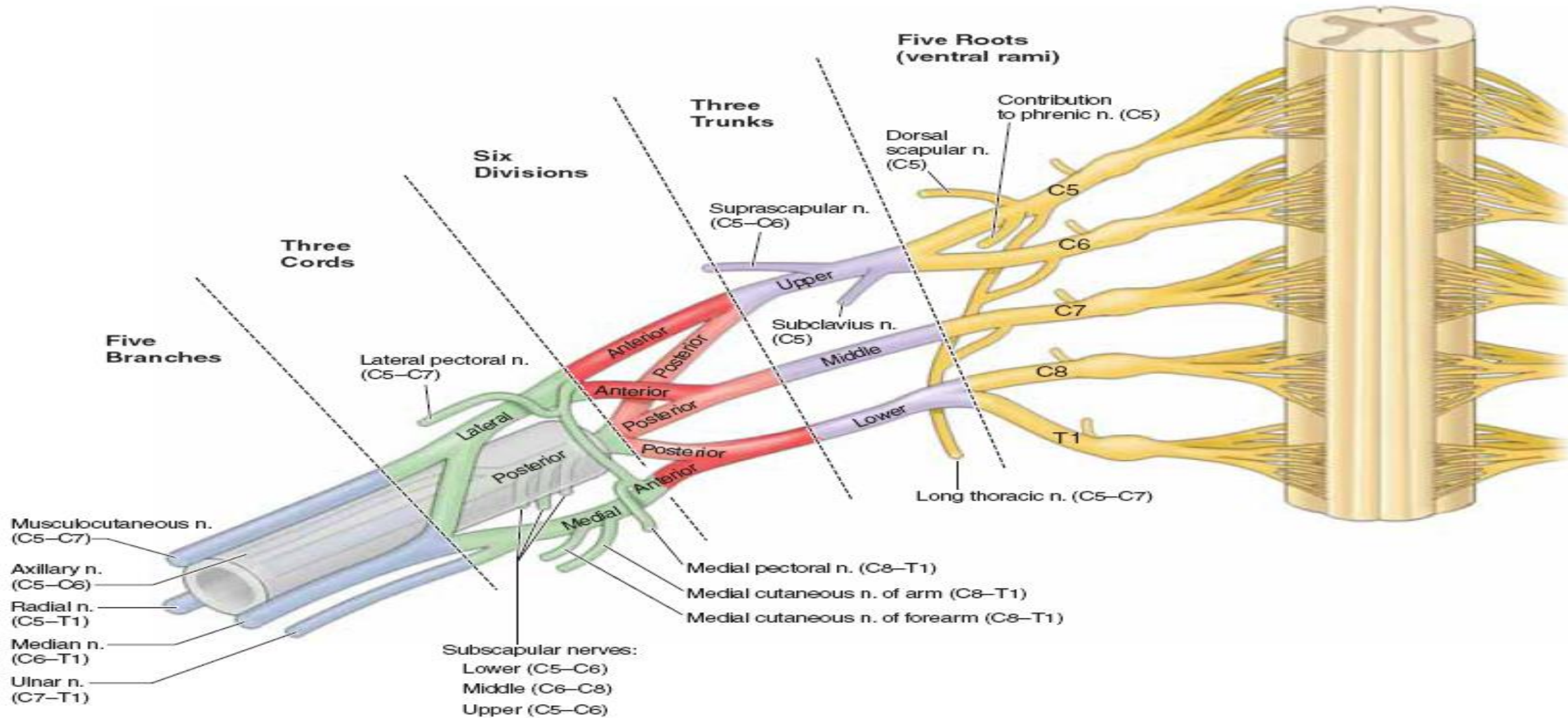
Next dose of LMWH 2h after Removal (1C)

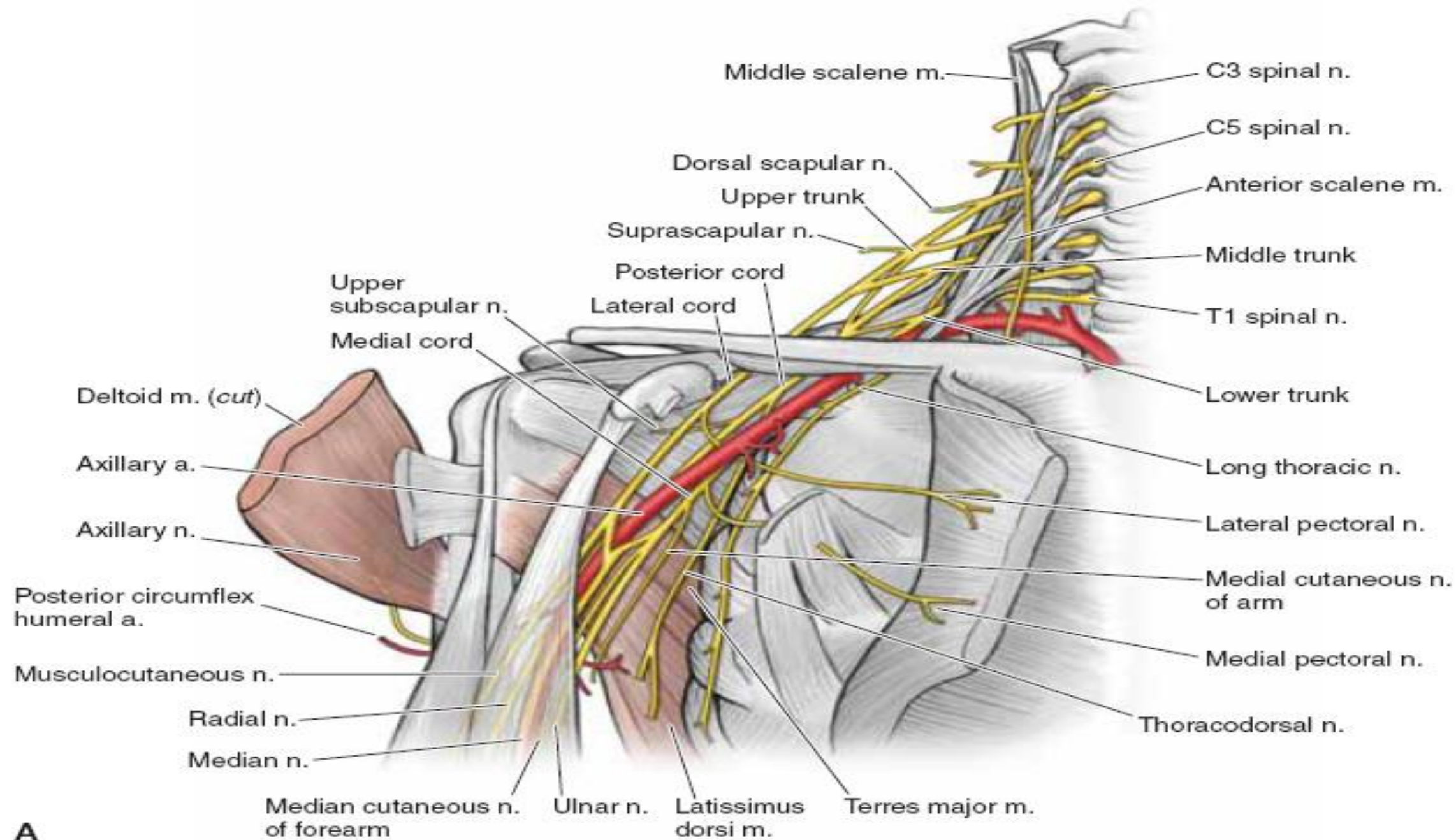
Neurologic evaluation , Even after Catheter Removal for 24 h (1C)



[Увеличить](#)

Upper Limbs Blocks

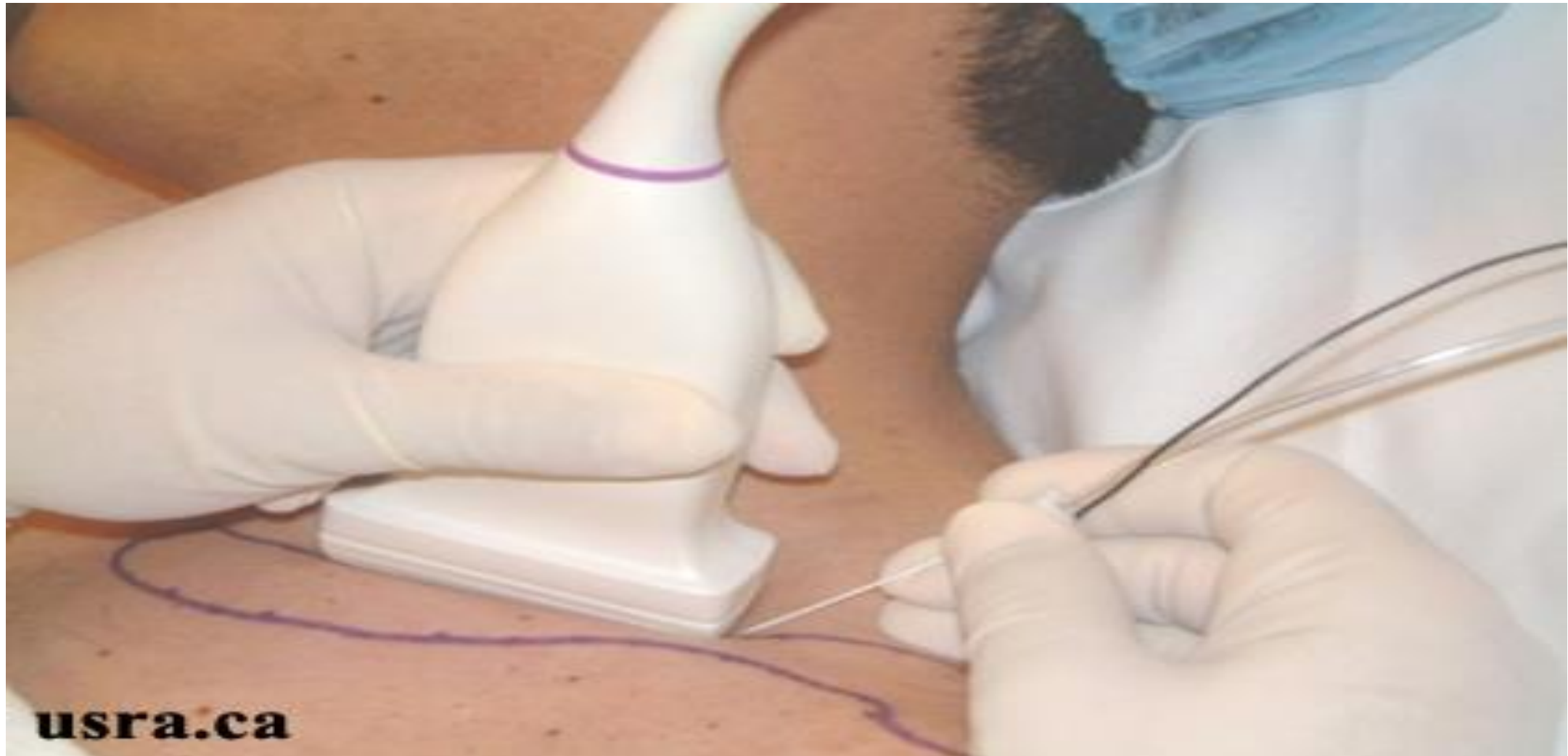




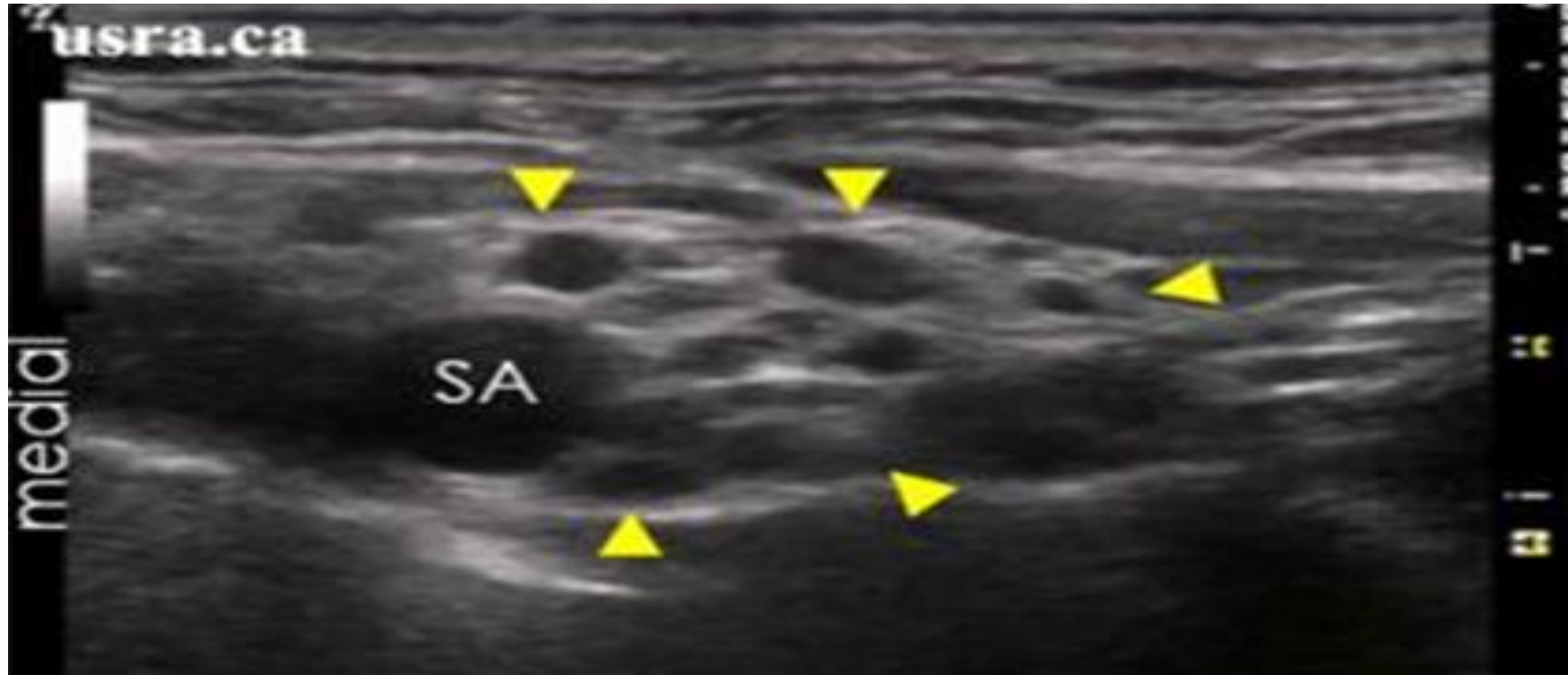
Interscalene block



Supraclavicular block



Supraclavicular block



Ultrasound-Guided Axillary Brachial Plexus Block



AT A GLANCE ▶ ▶ ▶

Indications:
Forearm and hand surgery

Transducer position:
Short axis to arm, just distal to pectoralis major insertion

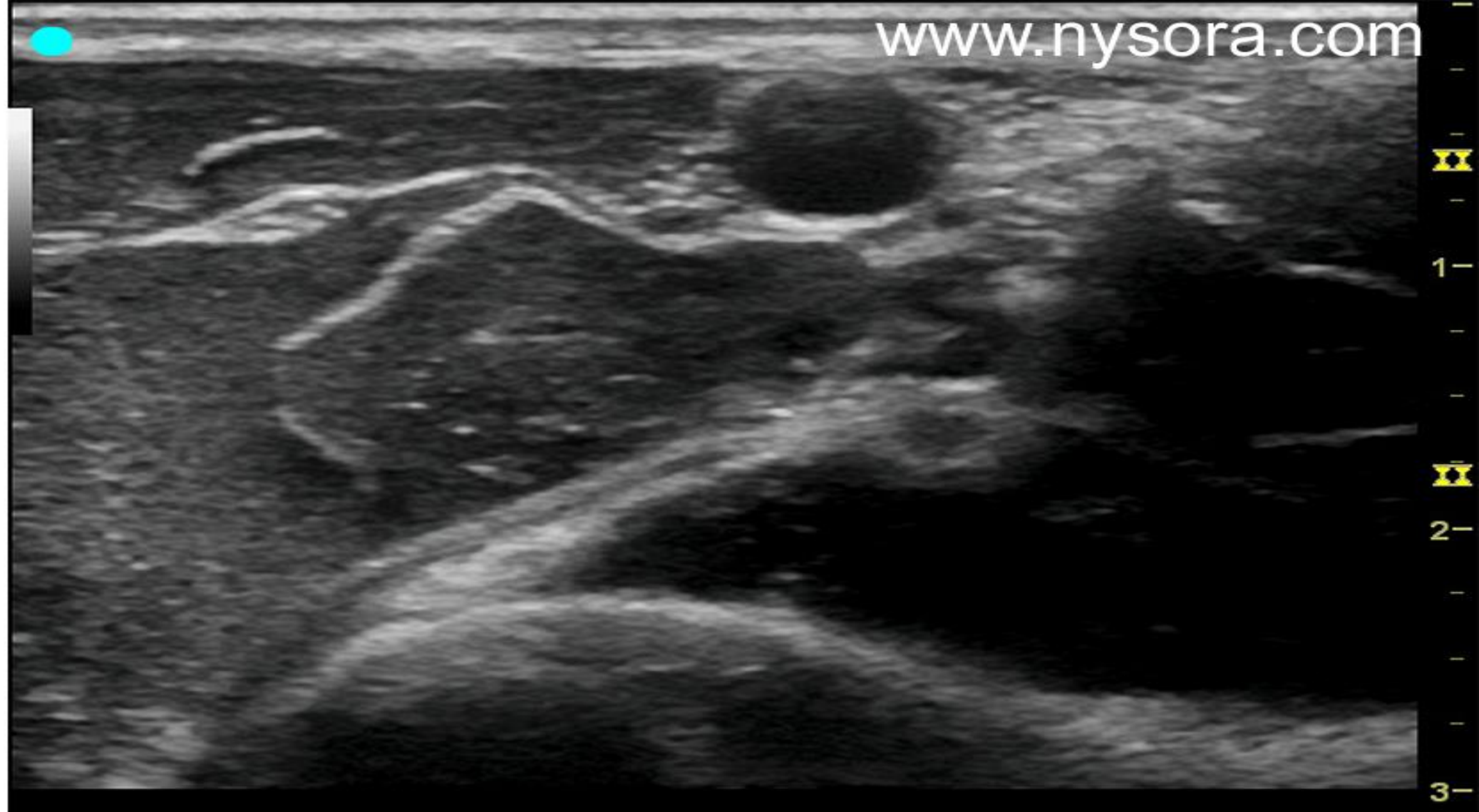
Goal:
Local anesthetic spread around axillary artery

Local anesthetic:
20-25 mL



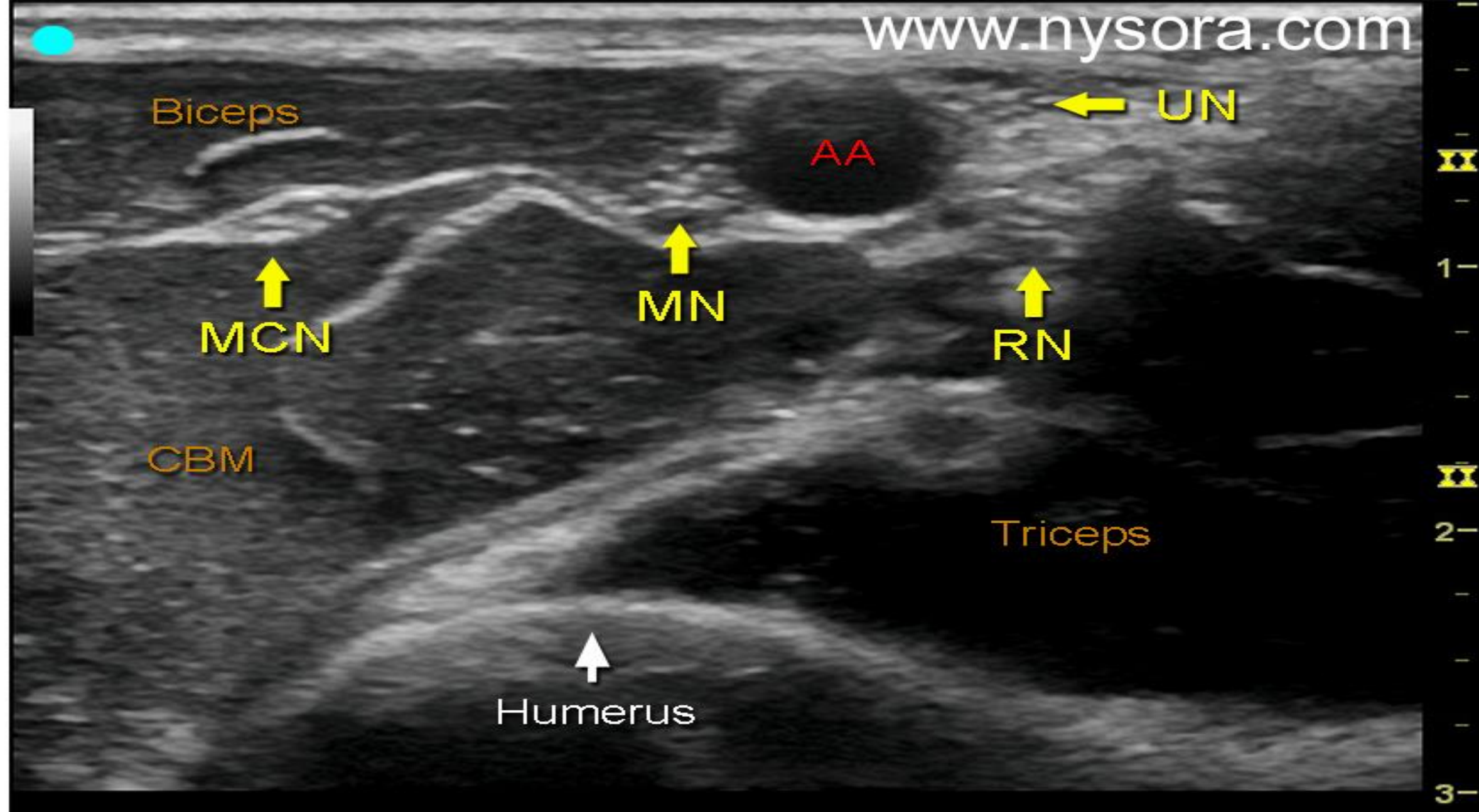
Figure 10-2. Needle and probe position.

Lateral



Axilla - Median, Ulnar, Radial, and MC Nerve

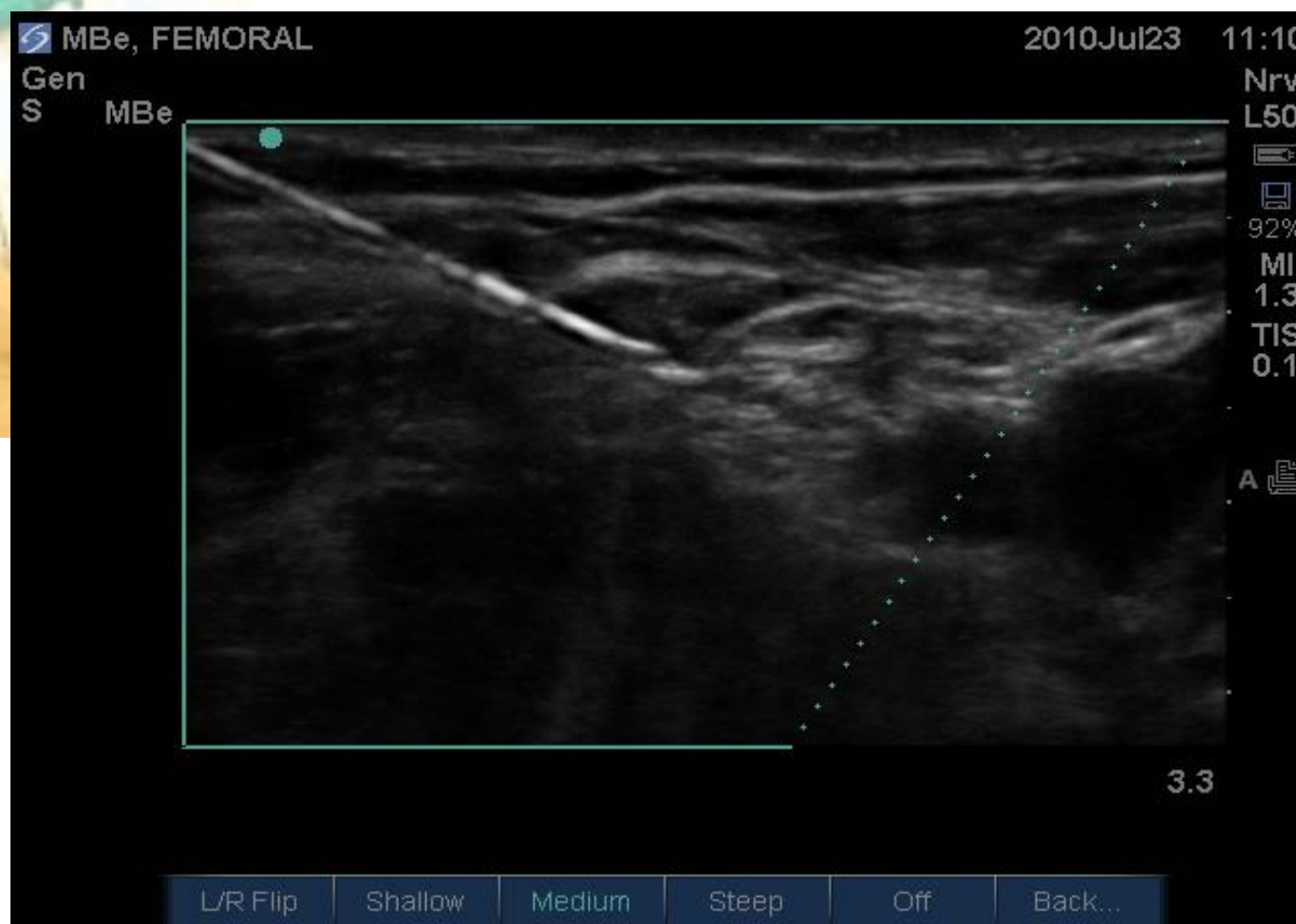
Lateral

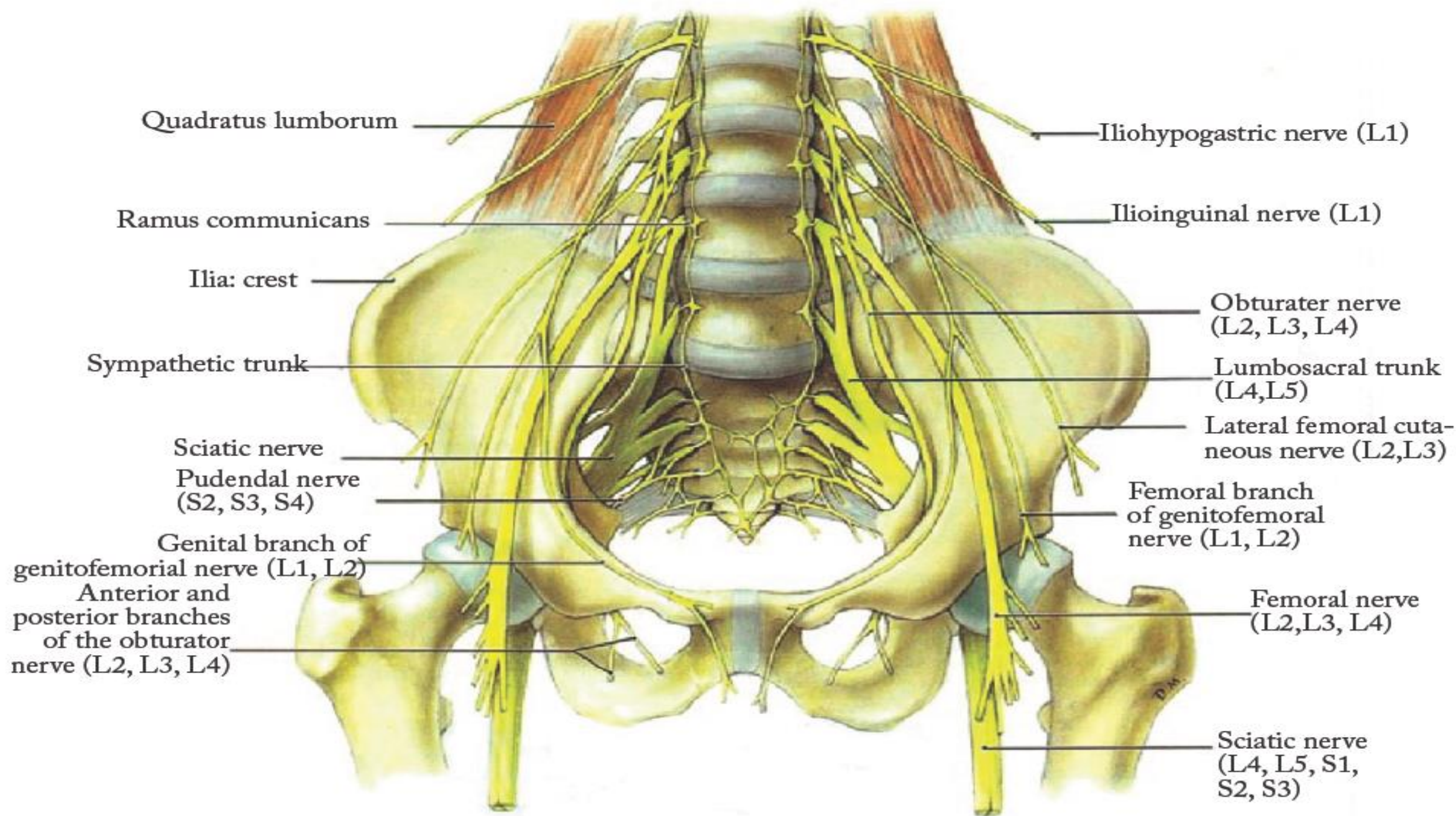


Axilla - Median, Ulnar, Radial, and MC Nerve

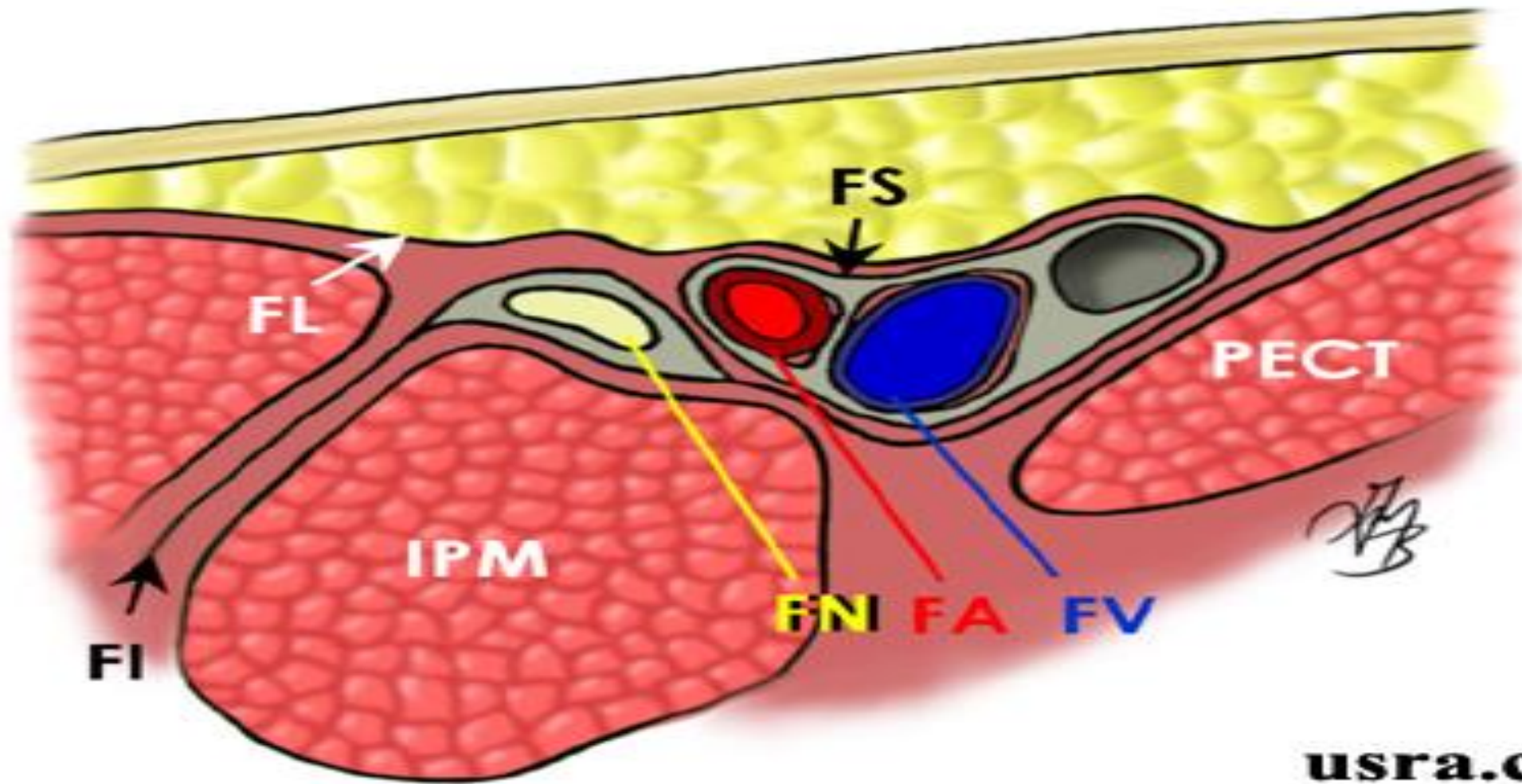


Lower Limb Blocks

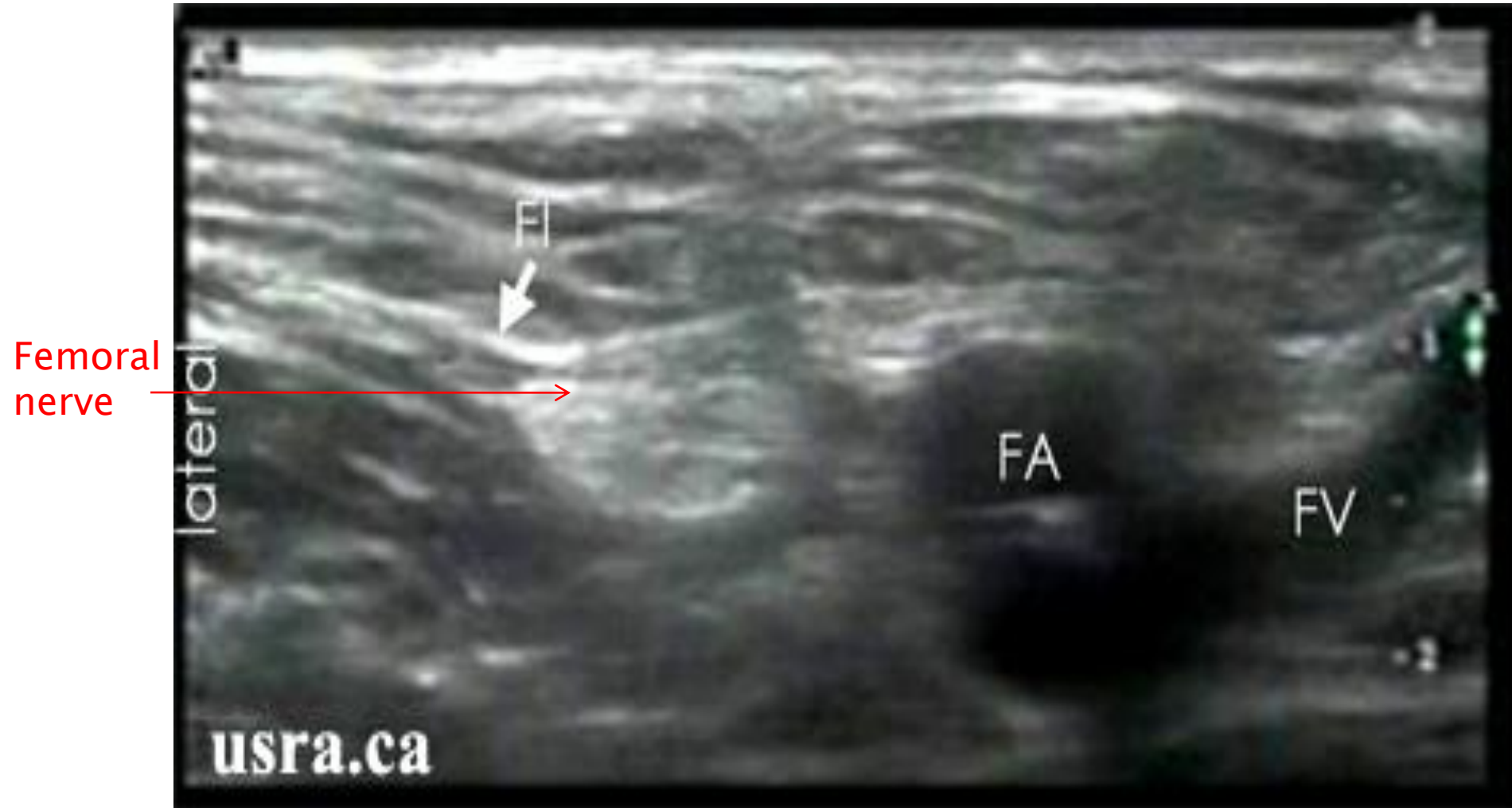




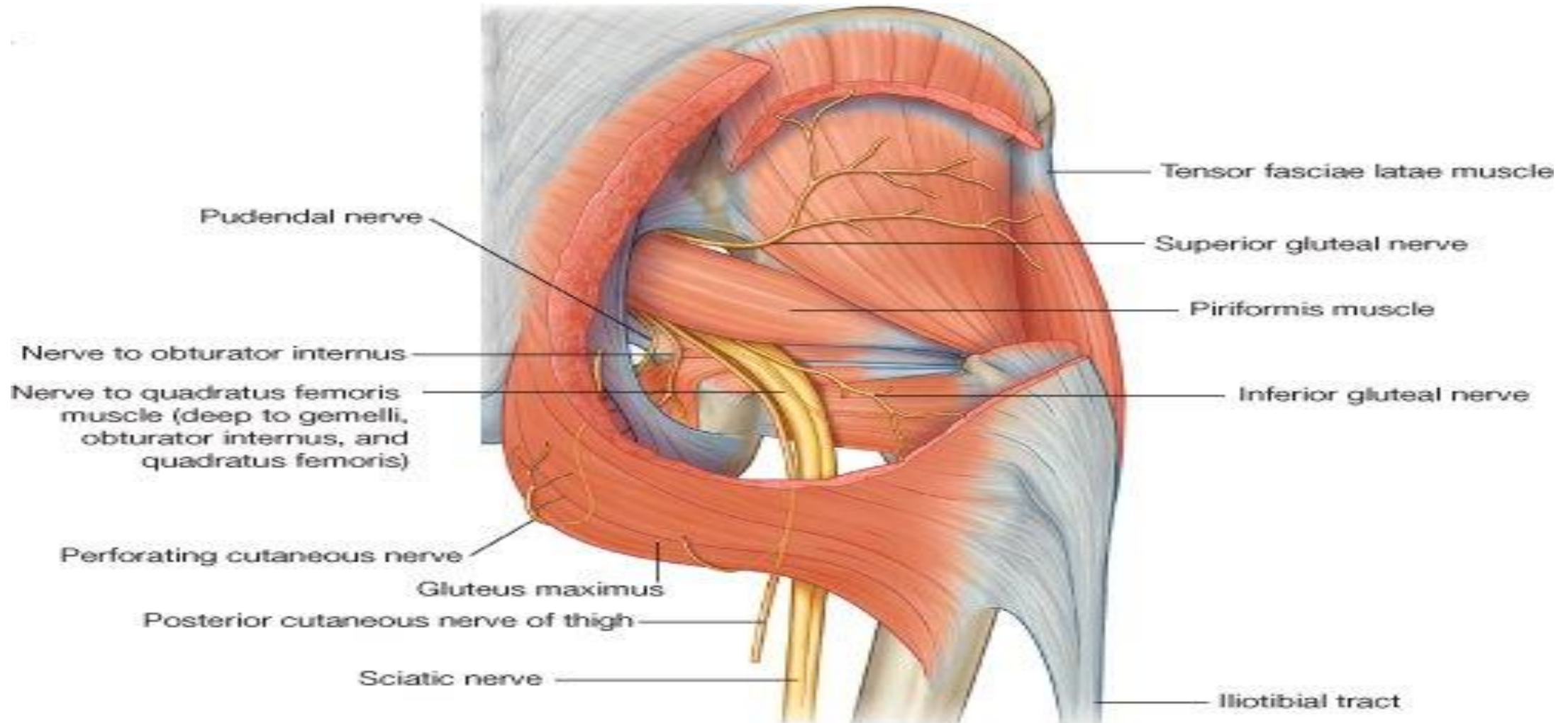
Femoral nerve block



Femoral nerve block



Sciatic nerve block





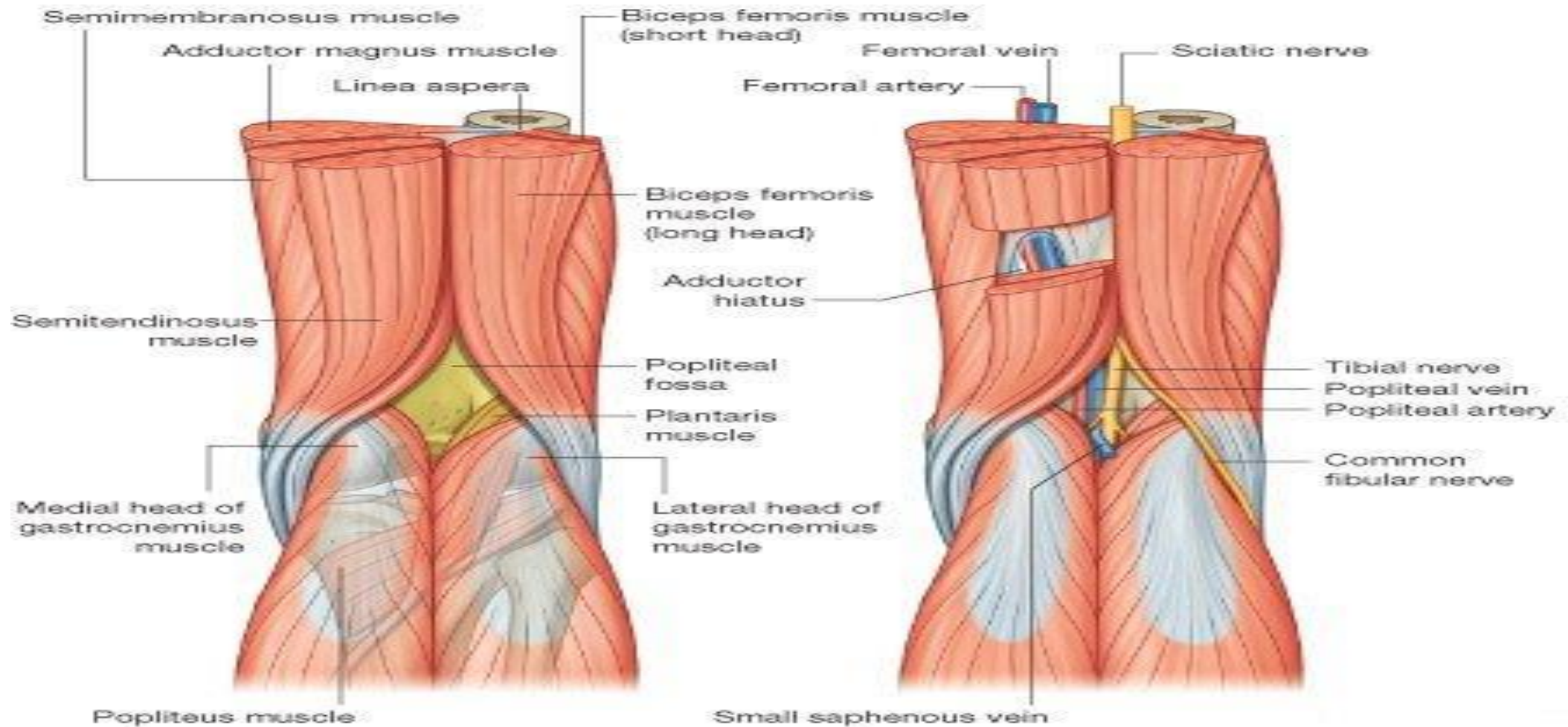


Popliteal block

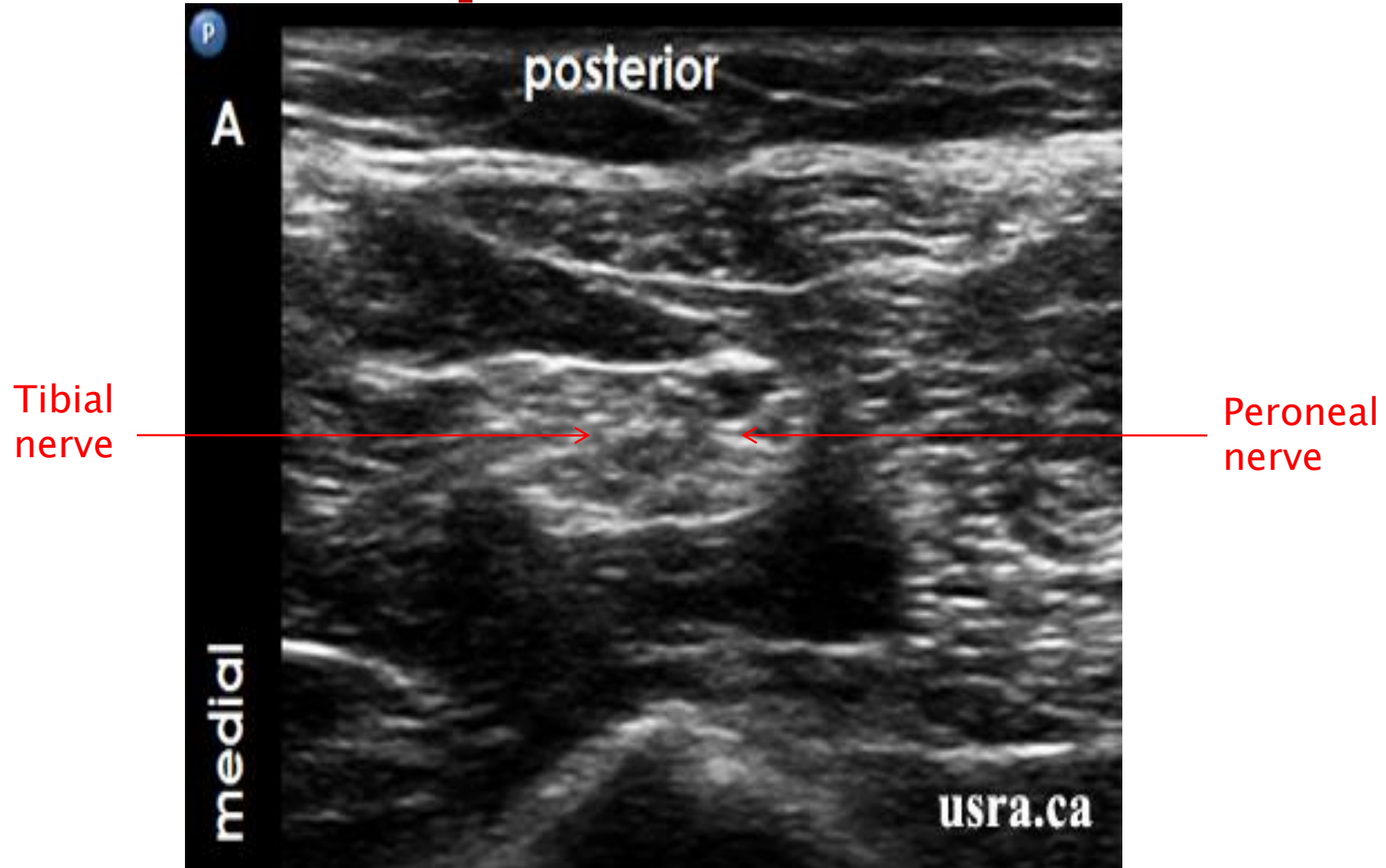


Sciatic nerve block

popliteal approach



Popliteal block

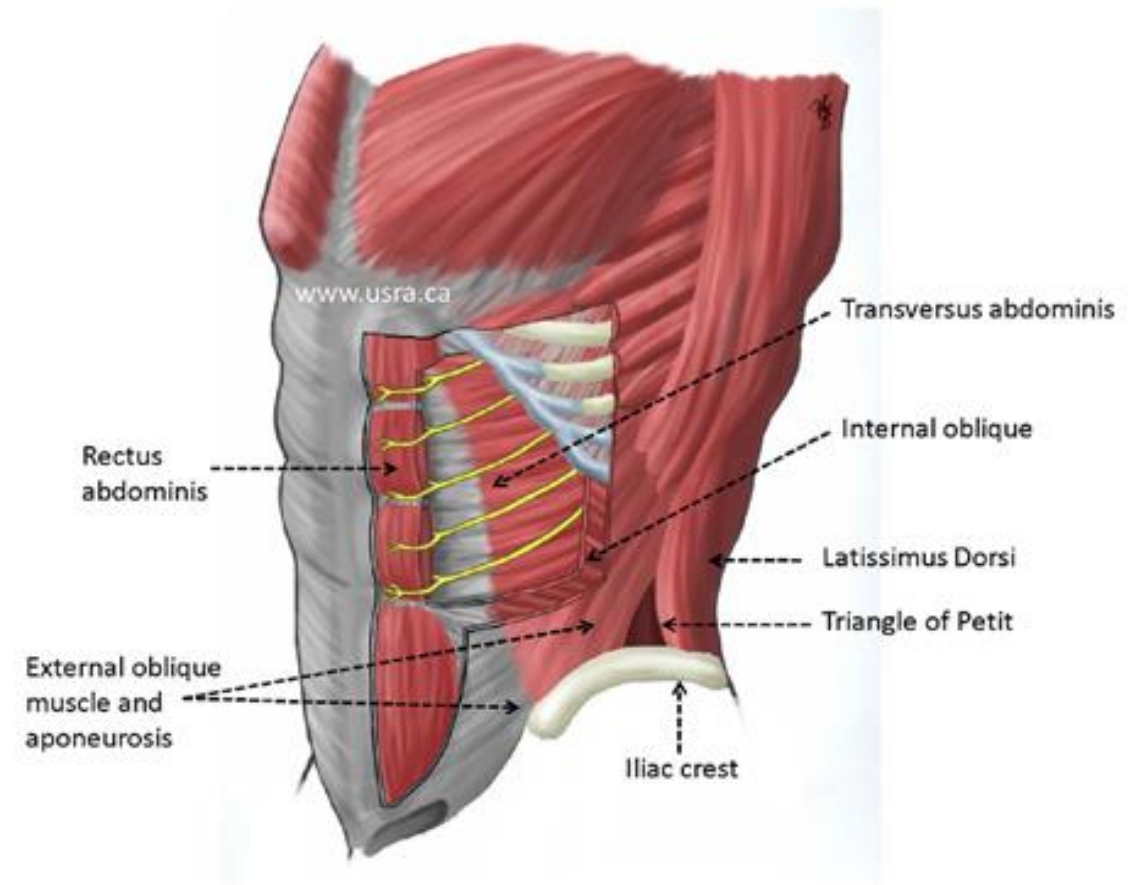
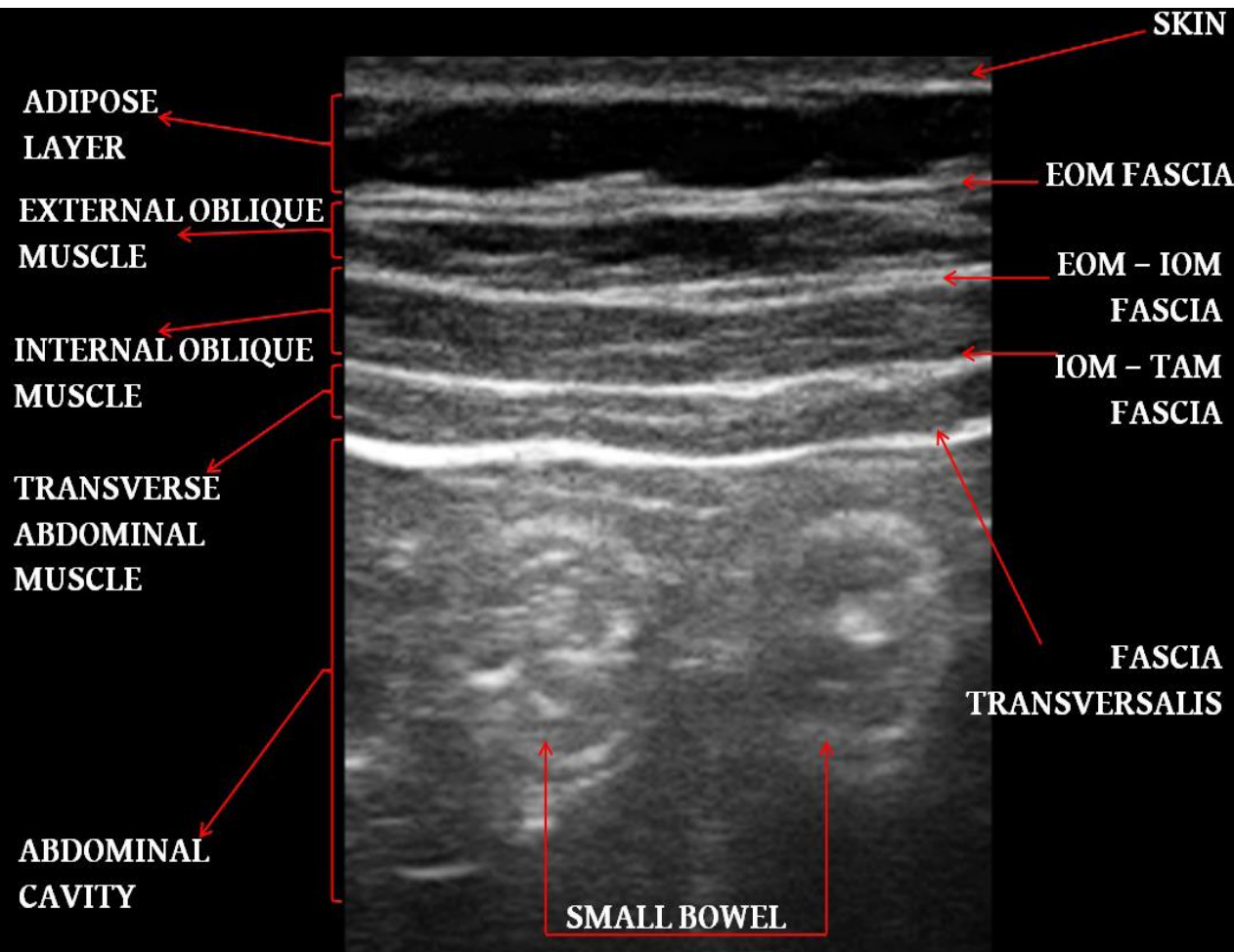




Transverse Abdominal Plain Block (TAP)



Transversus abdominis plane (TAP) block



Ilioinguinal N Block

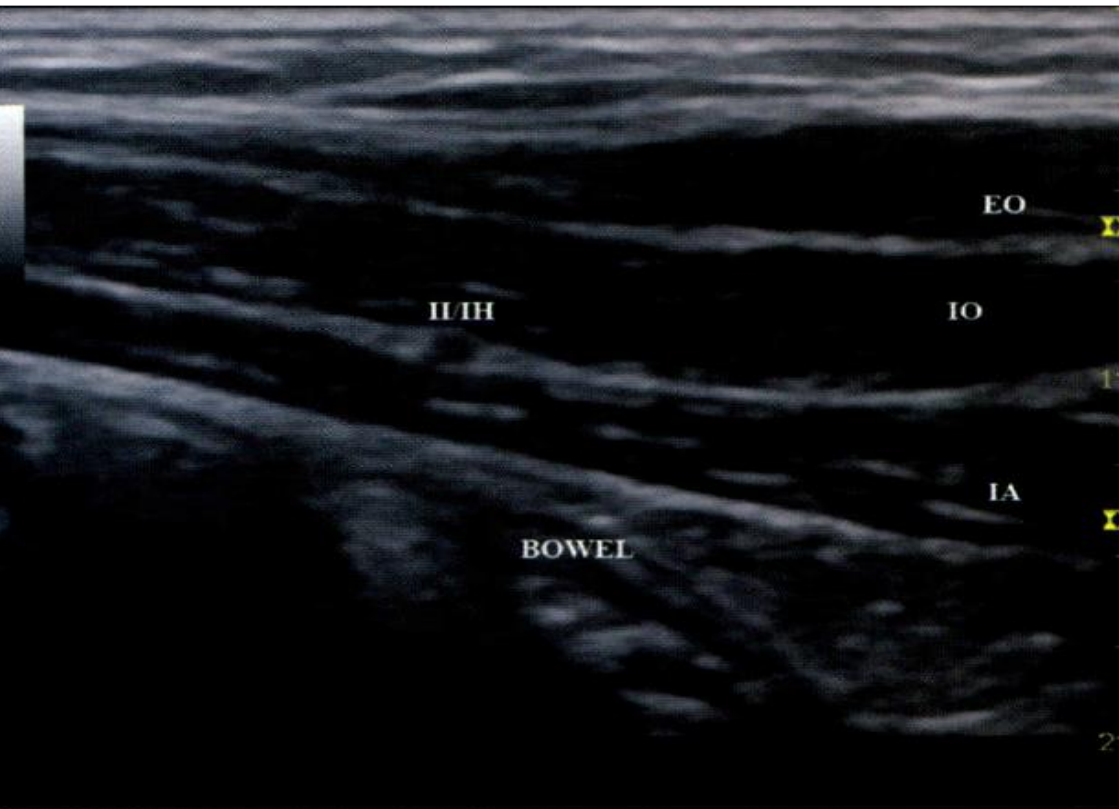
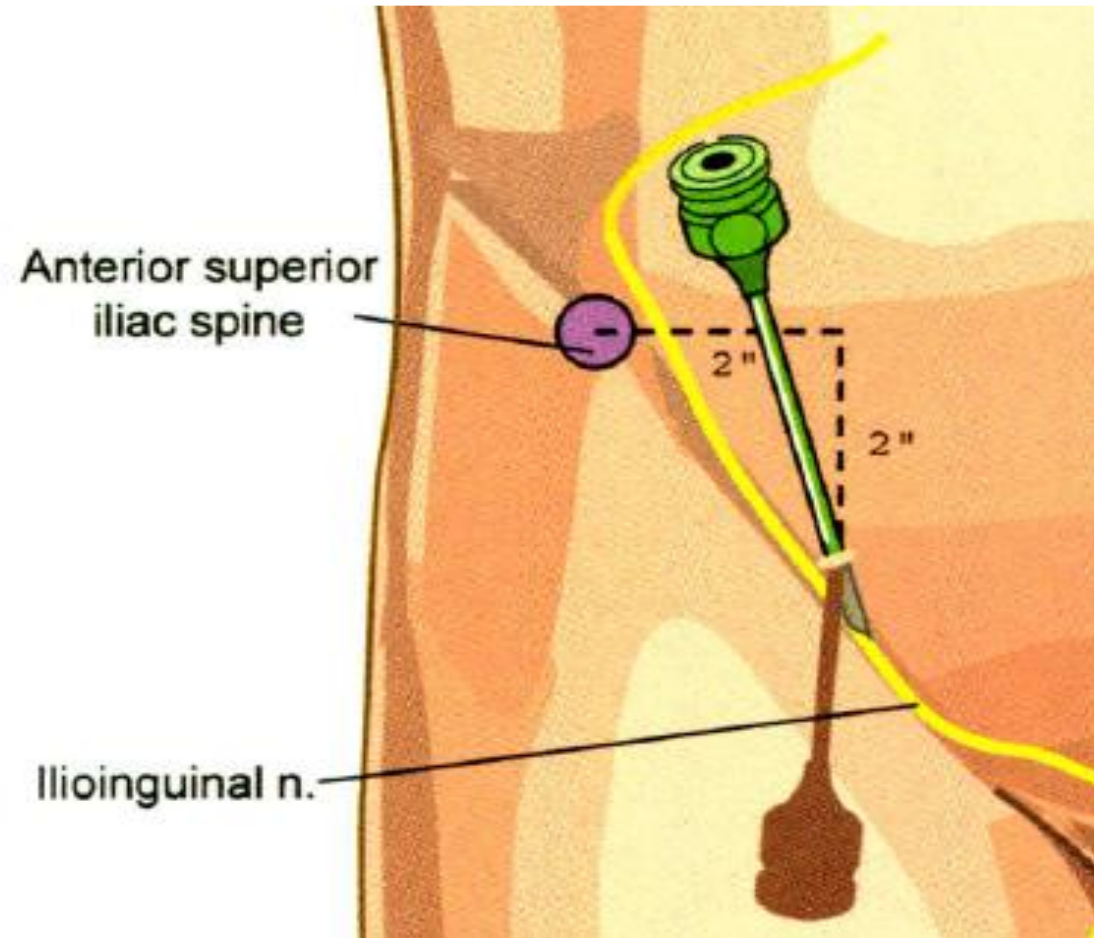


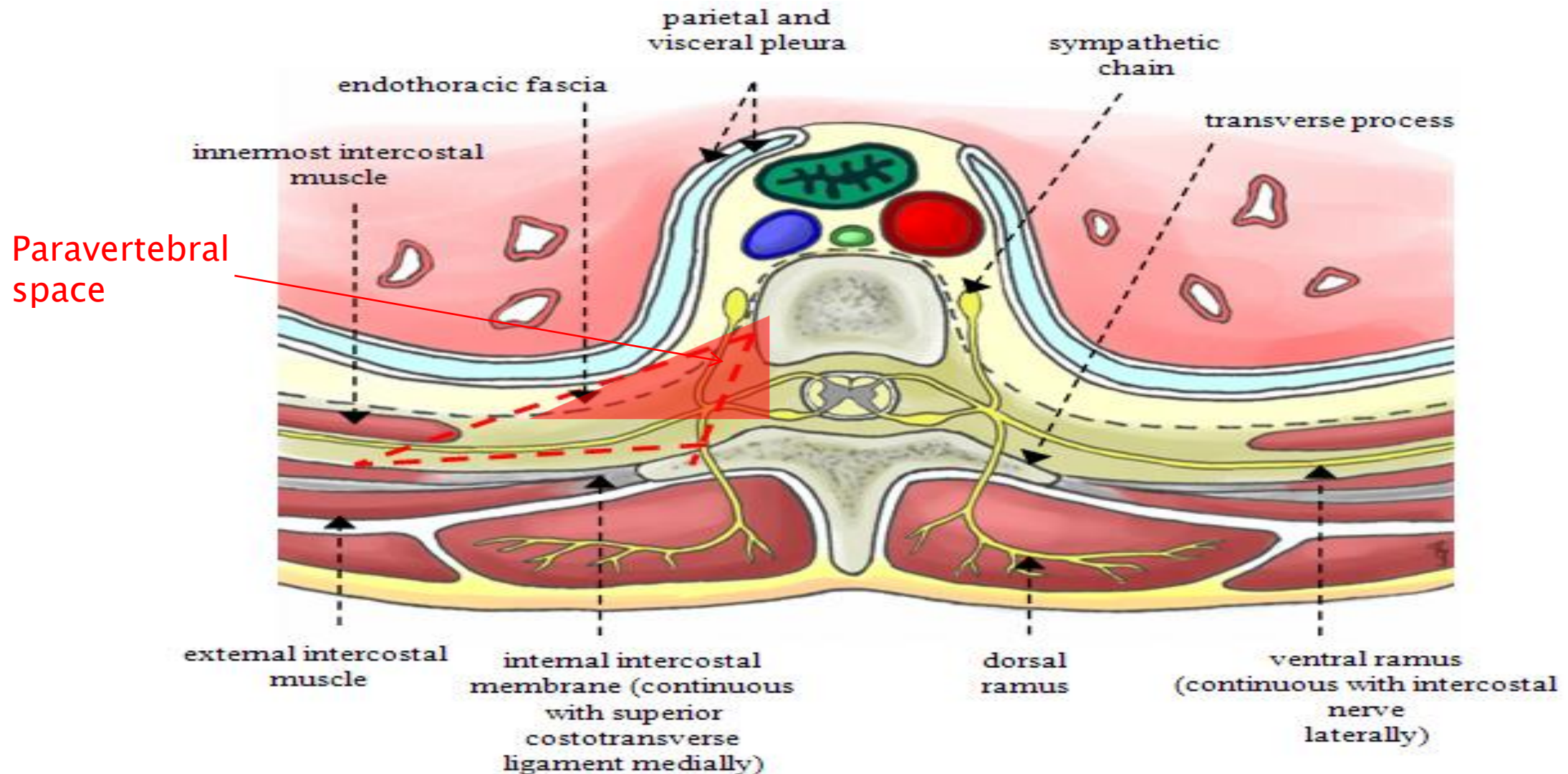
Figure 29-7. Ultrasound scan of ilioinguinal and iliohypogastric nerve between the internal oblique and transversus abdominis muscles. *IL-IH*, ilioinguinal and iliohypogastric nerves; *IO*, internal oblique muscle; *EO*, external oblique; *TA*, transversus abdominis muscle; *B*, bowel.

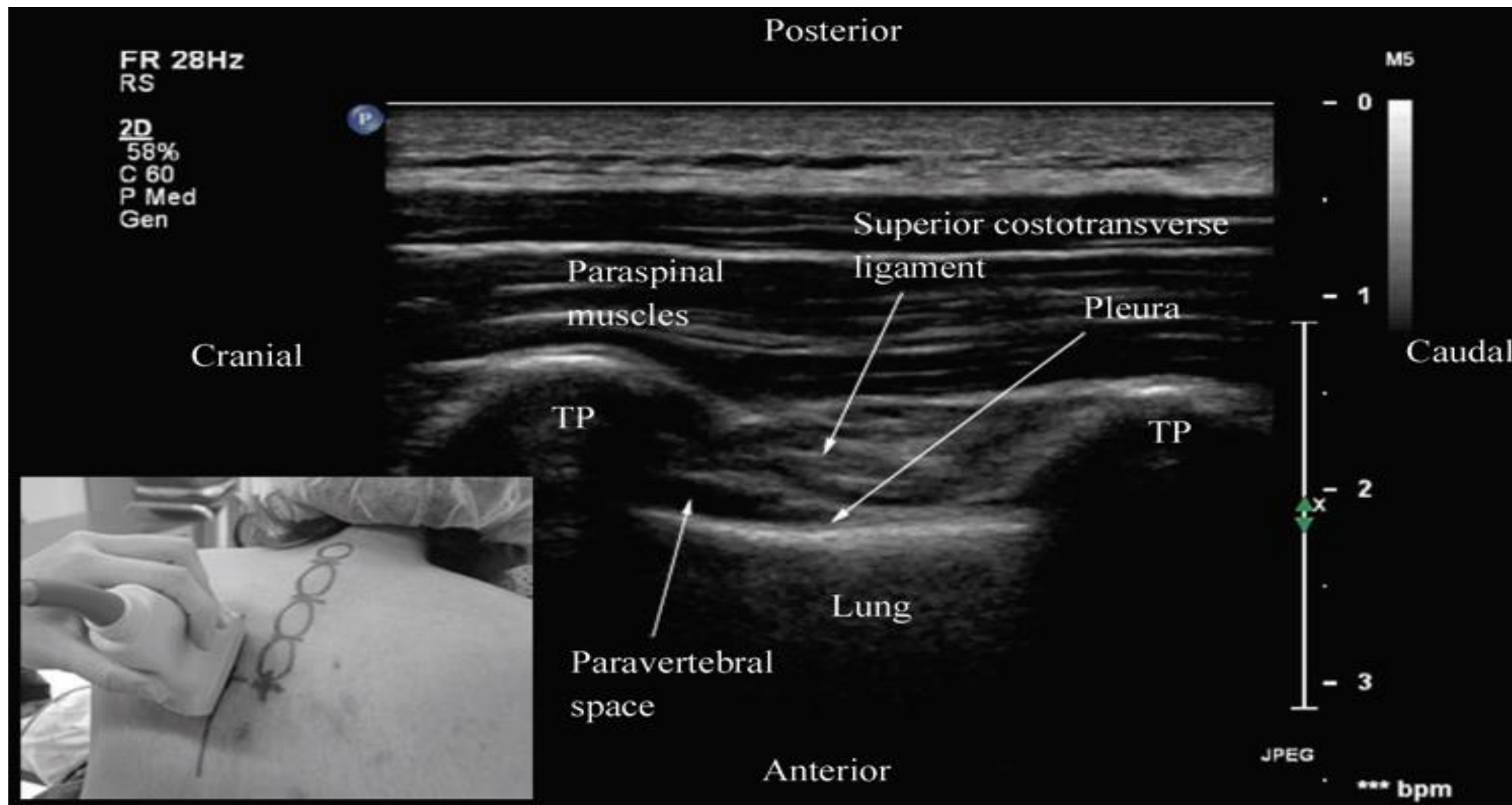


Paravertebral block

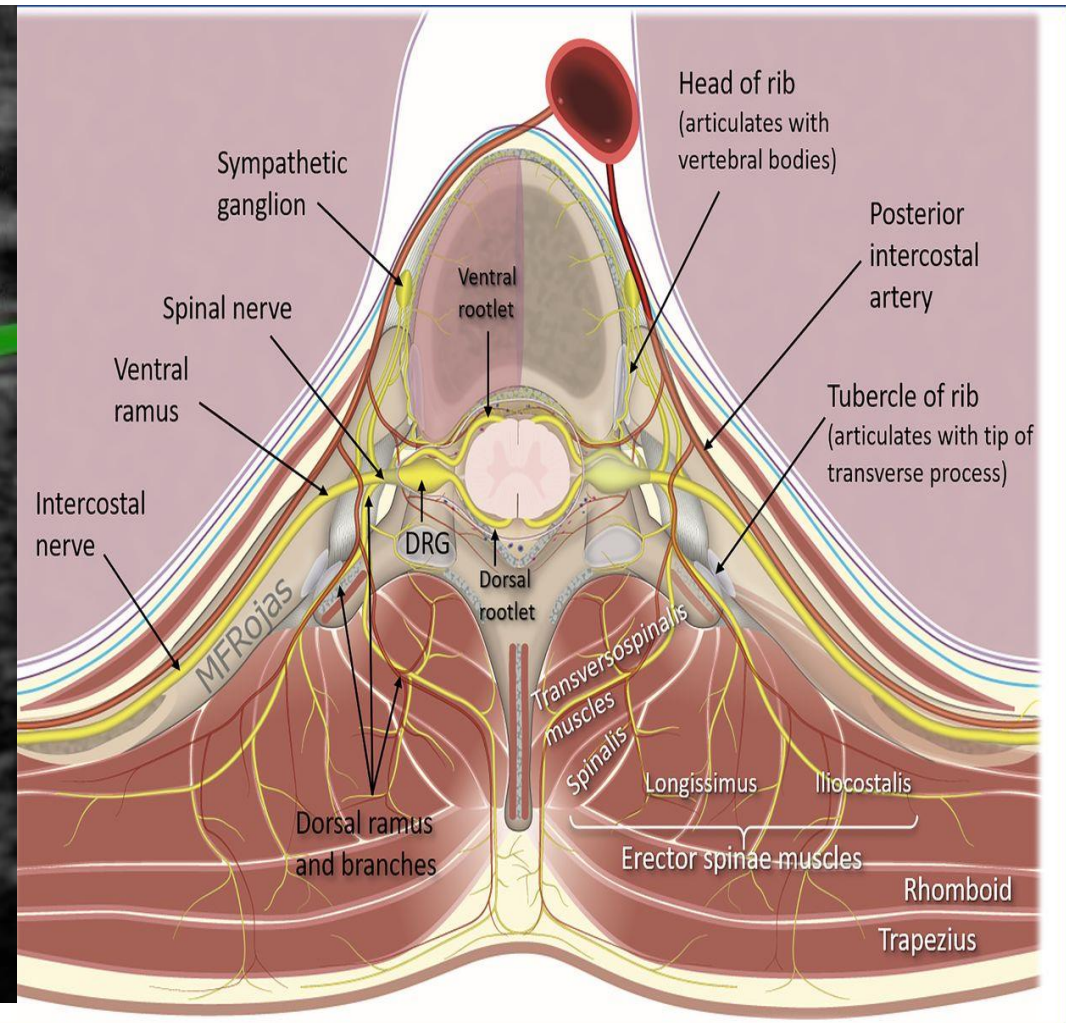
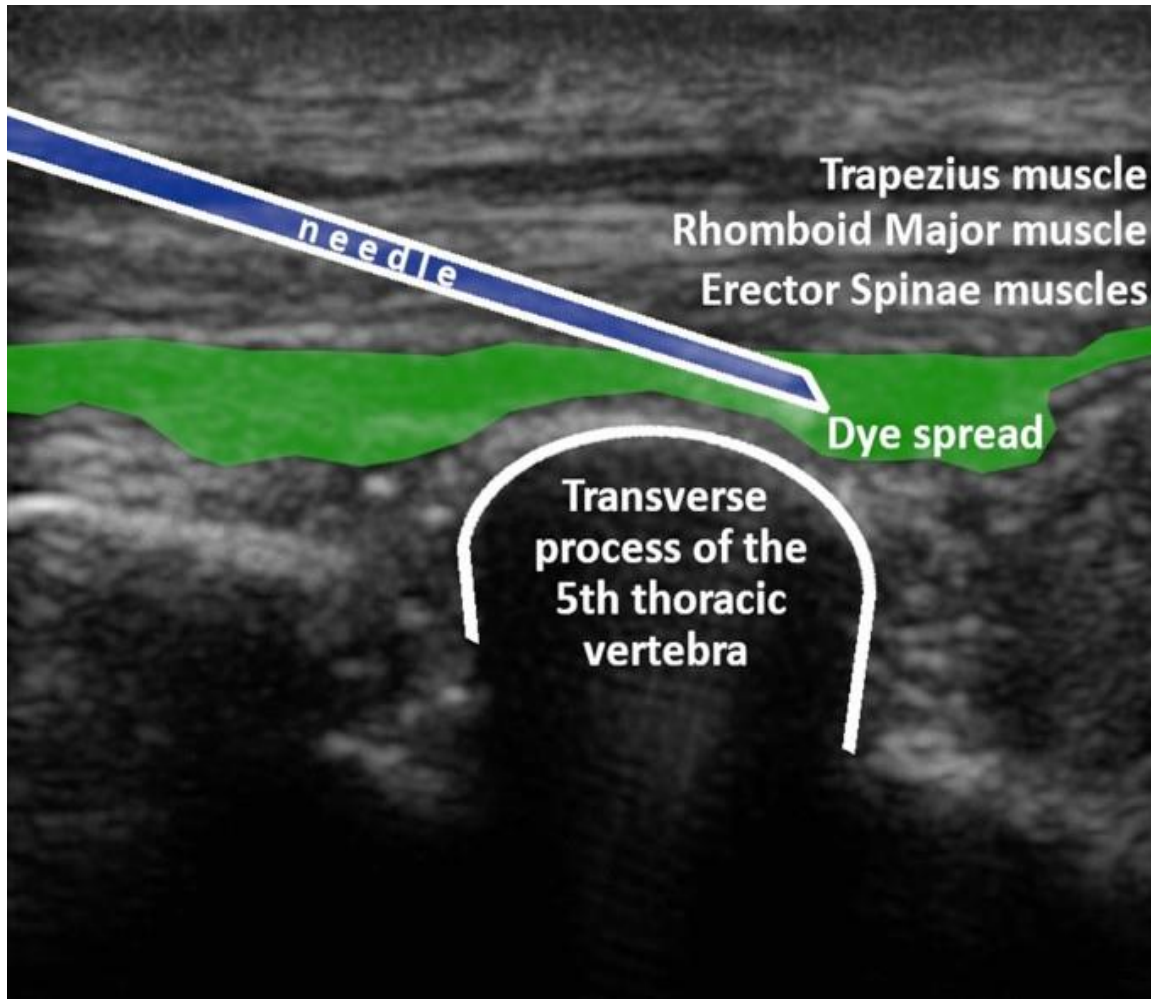


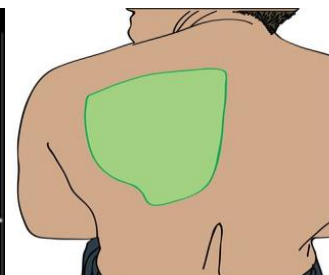
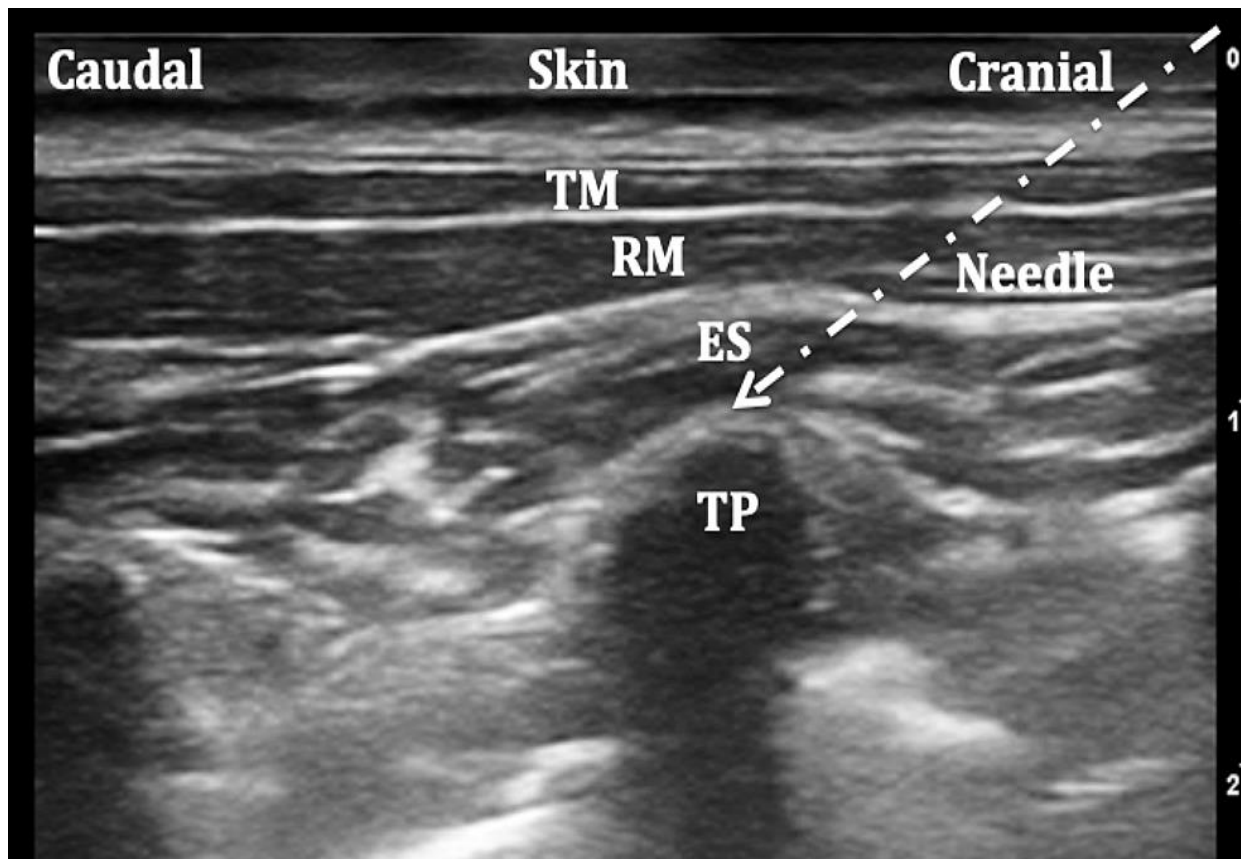
Paravertebral block





Erector spine Plane Block





Volunteer three



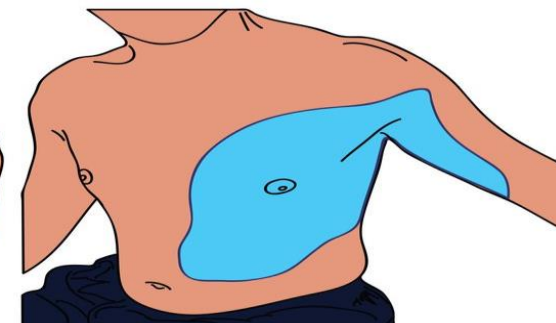
Volunteer four



Volunteer five



Volunteer six



Quadratus Lumborum Block

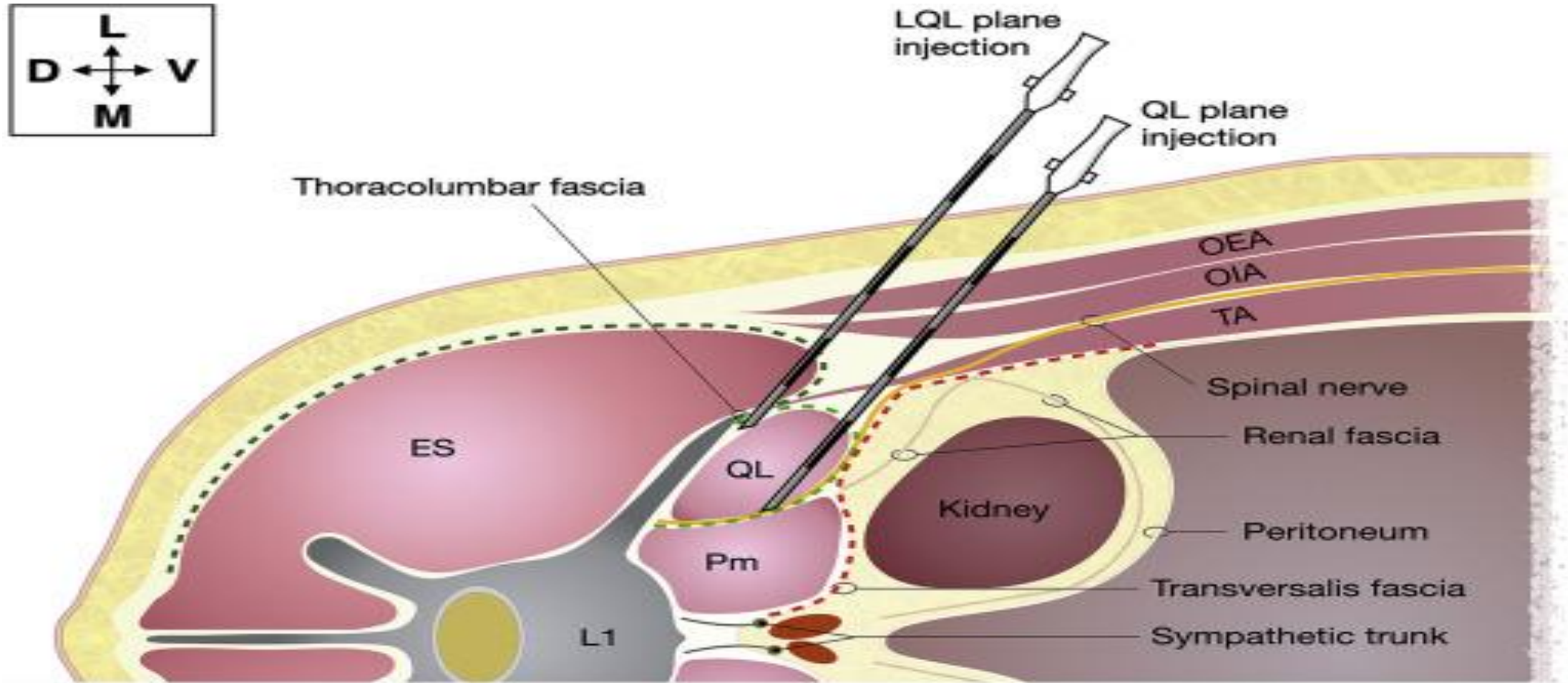
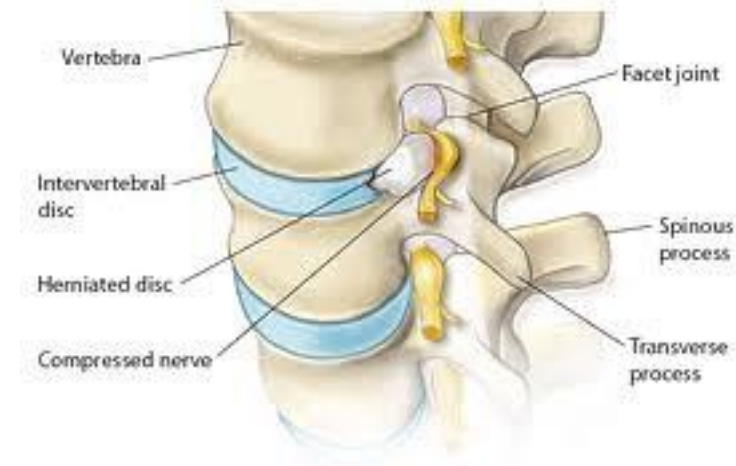
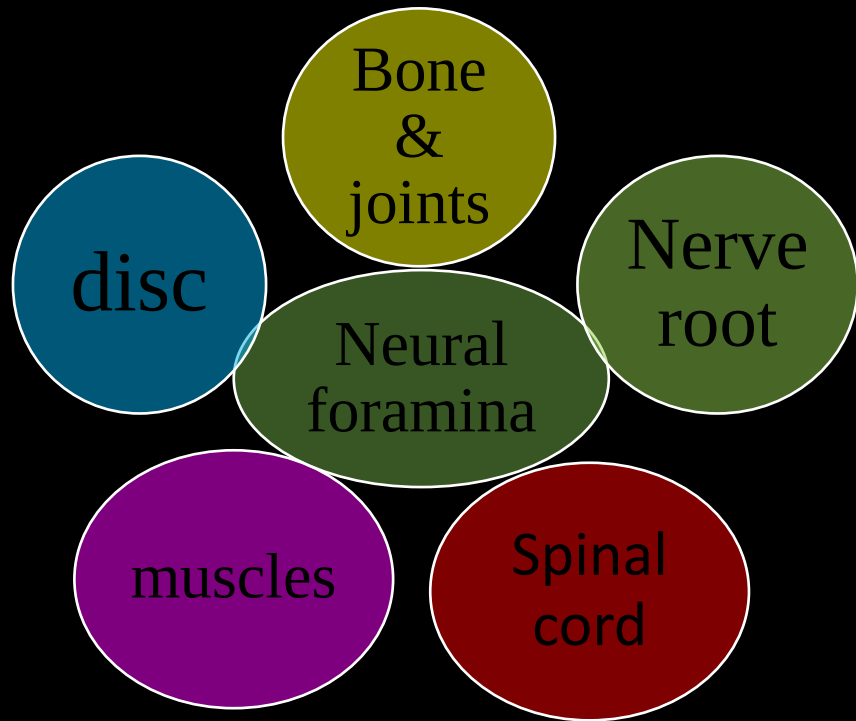






Figure 4.10. Combined ultrasound and fluoroscopic phantom for cervical transforaminal injections. This phantom contains anatomically correct fluid filled vertebral arteries that exhibit pulsed flow under *ultrasound* Doppler examination, and will uptake *fluoroscopic* dye if mistakenly injected through procedural needle. The picture demonstrates the phantom used by a resident physician.

Pain Generators in back



SLR



Straight leg raising

LASEGUE

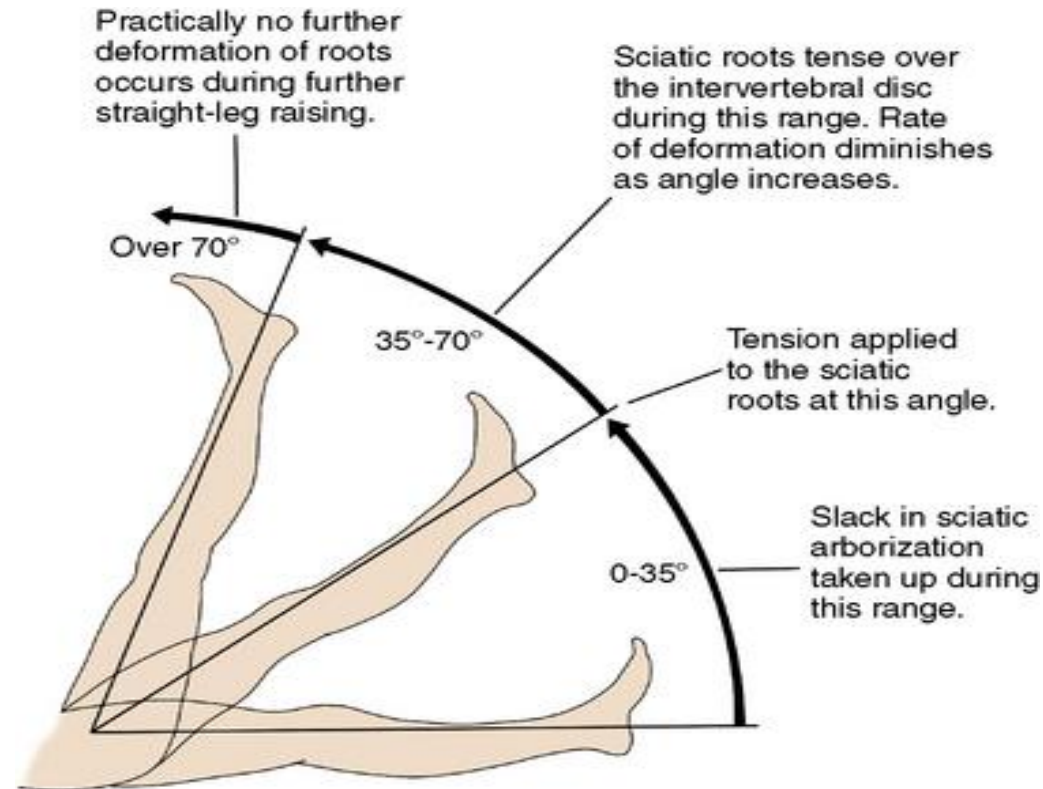


Dorsiflexion of foot intensifies pain

CROSS LEG SLR

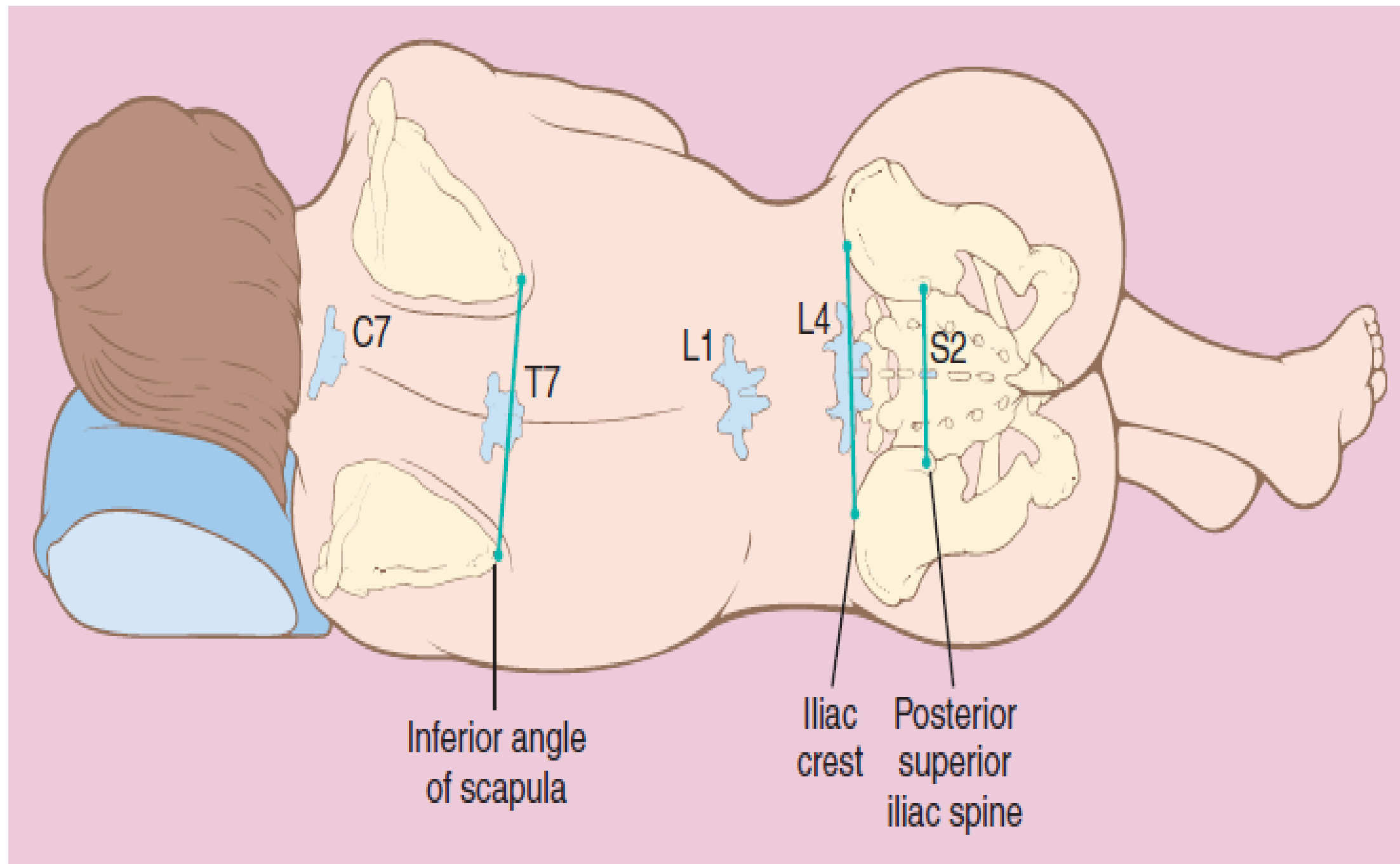


Crossed straight leg raising



Lumbar Pain intervention





Epidural Anesthesia

