REGIONAL ANAESTHESIA

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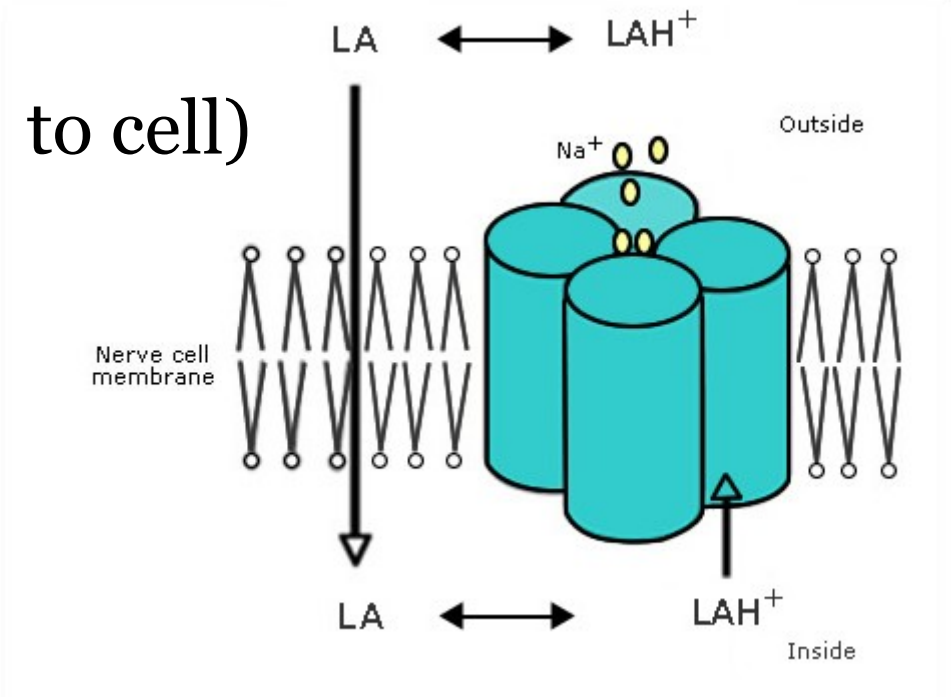
Anaesthesia = loss of sensation

- General (narcosis)
- Local / regional

- Combined

Local anaesthetic

- Reversible block
- Sodium ion canal (Na+ to cell)



Nerve fibre

- A: myelinated
  - α (alfa): motor function, reflex activity a proprioception
  - β (beta): touch, pressure
  - γ (gama): muscular tonus
  - δ (delta): PAIN and sense of heat
- B: thin, myelinated preganglion-nerve fibre, autonomic function, smooth muscle of vessels
- C: non-myelinated, PAIN

Nerve block - signs

- (B fibre) block of sympaticus = heat
- (C + Aδ fibre) block of pain and heat
- (Aβ) loss of touch sensation
- (Aα) motor block

Local anaesthetics

Potentially toxic!

- CNS
  - Convulsion, coma, depression of breath!
    - Perioral tingling, iron taste, somnolence, vertigo, tinitus (ringing), nystagmus, visual disturbance
- Cardiovascular system
  - Hypotension, bradycardia, colaps of circulation, asystoly or ventricular fibrilation!

Local anaesthetics

- Esters
- Amides

- Examples: lidokain, trimecain (Mesocain) bupivakain (Marcaine), prokain, artikain (Ultracain, Supracain), ropivakain (Naropin)

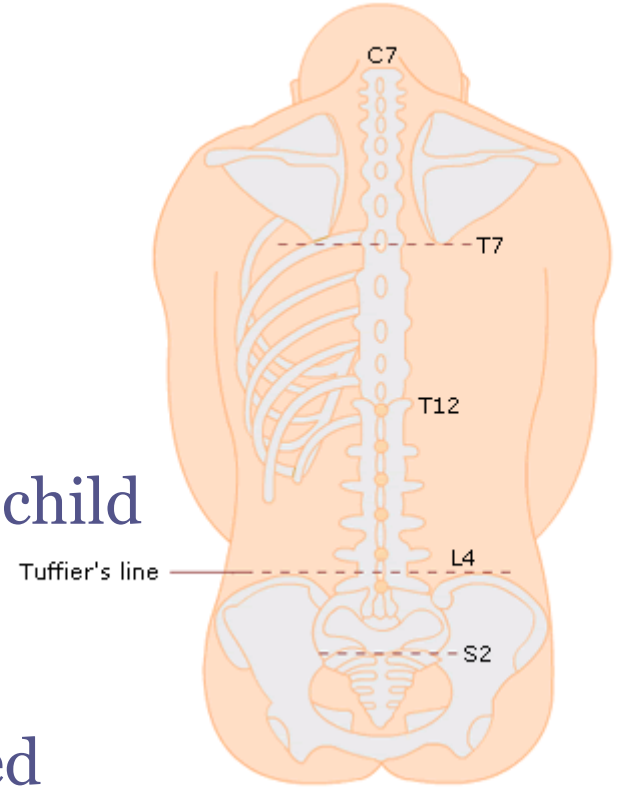
When to use regional techinques

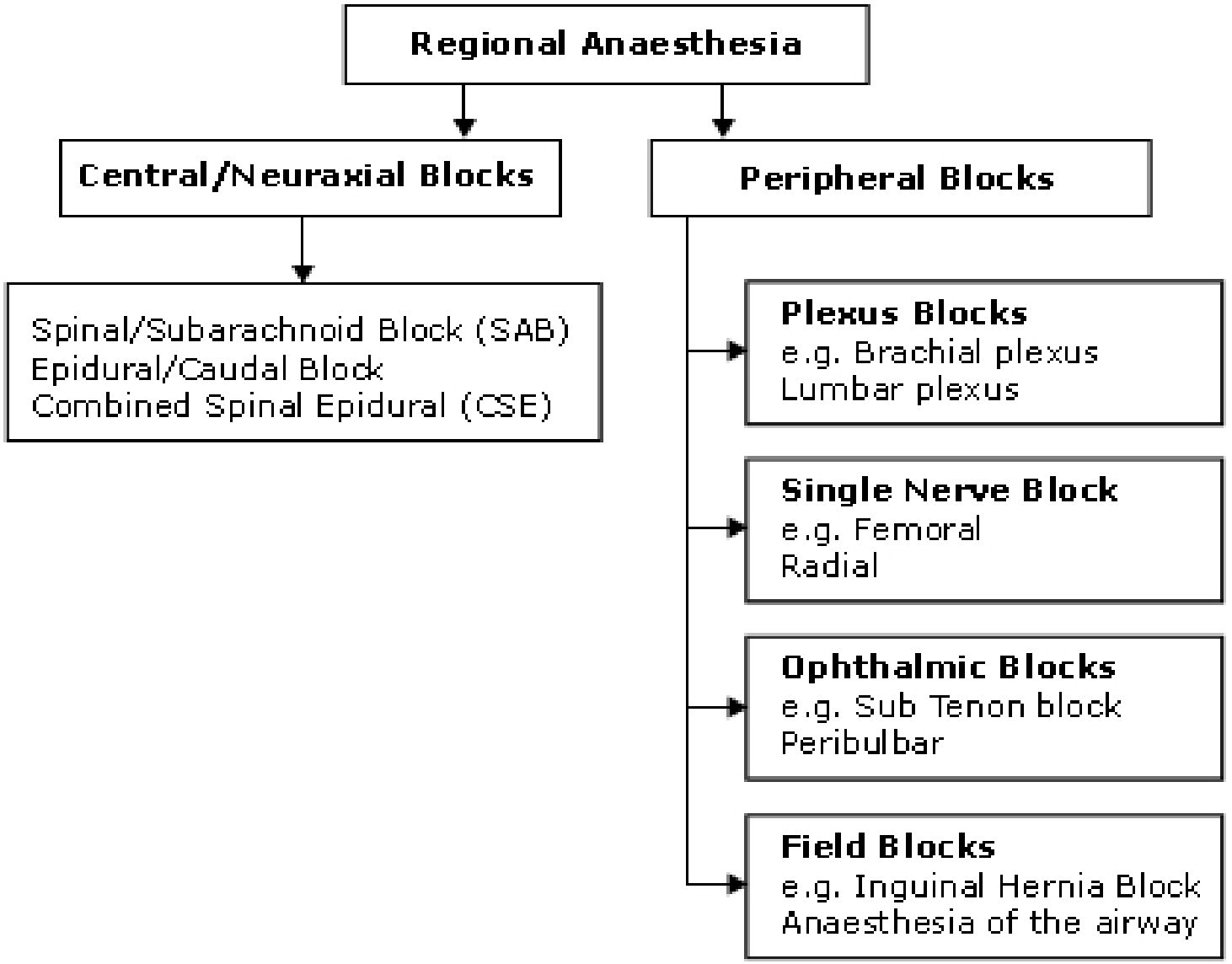
1. **Patient safety** – frail elderly, comorbidities
2. **Patient satisfaction** – ealy oral intake, no PONV, no sore throat
3. **Surgical outcome** - awake craniotomy

Most common regional anaesthesia

Caesarian section

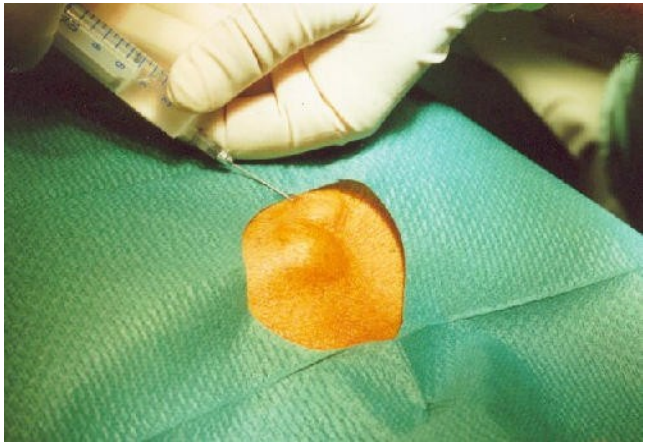
- Patient safety
  - Control of airway
- Patient satisfaction
  - Awake during the delivery of the child
  - Presence of partner
- Surgical outcome
  - Intraoperative bleeding is reduced
  - Reduced stress response




Regional Anaesthesia
Central/Neuraxial Blocks
Peripheral Blocks
Spinal/Subarachnoid Block (SAB)
Epidural/Caudal Block
Combined Spinal Epidural (CSE)
Plexus Blocks
e.g. Brachial plexus
Lumbar plexus
Single Nerve Block
e.g. Femoral
Radial
Ophthalmic Blocks
e.g. Sub Tenon block
Peribulbar
Field Blocks
e.g. Inguinal Hernia Block
Anaesthesia of the airway

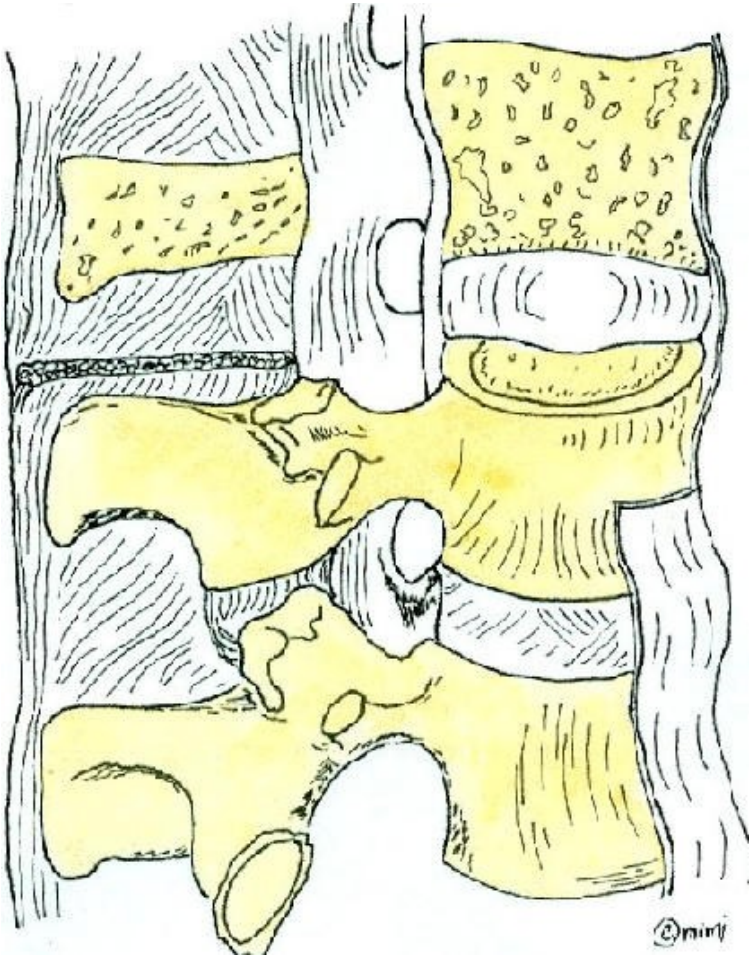
Local anaesthesia

- **Local anaesthesia**
  - Superficial (topic, mucosa)
  - Infiltration



Central neuroaxial block

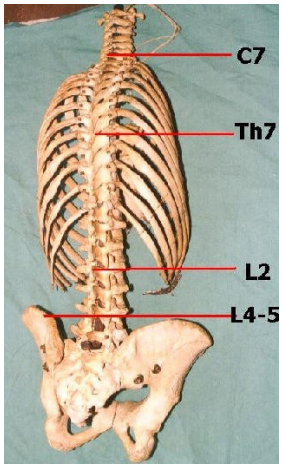
- Epidural
- Subarachnoideal (spinal)



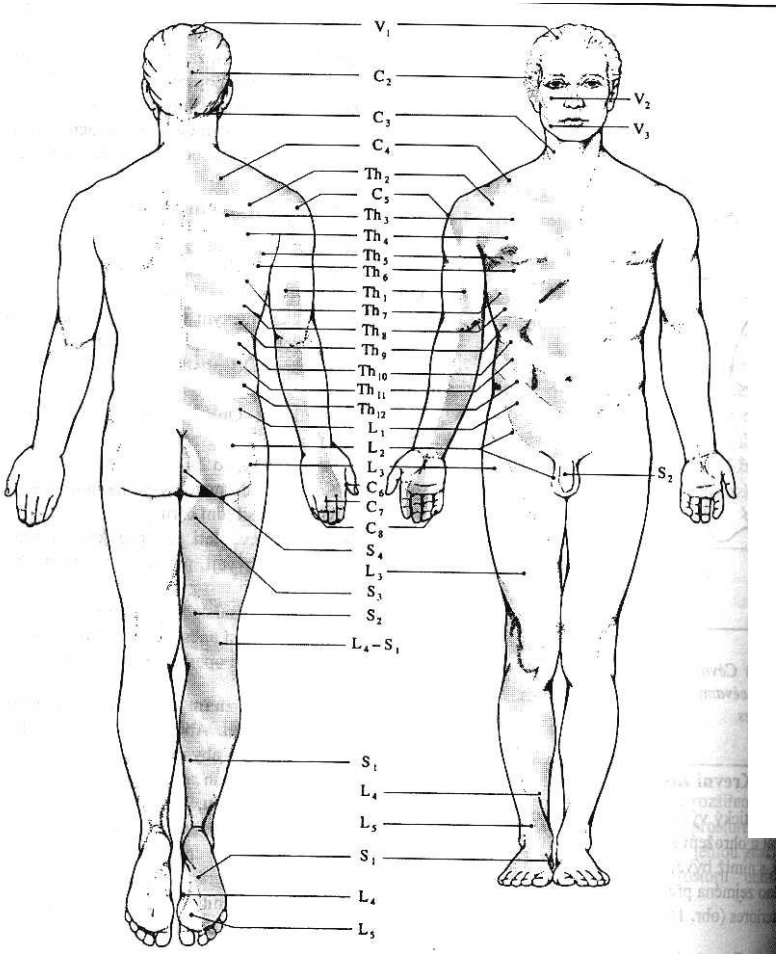
Anatomy of spinal cord

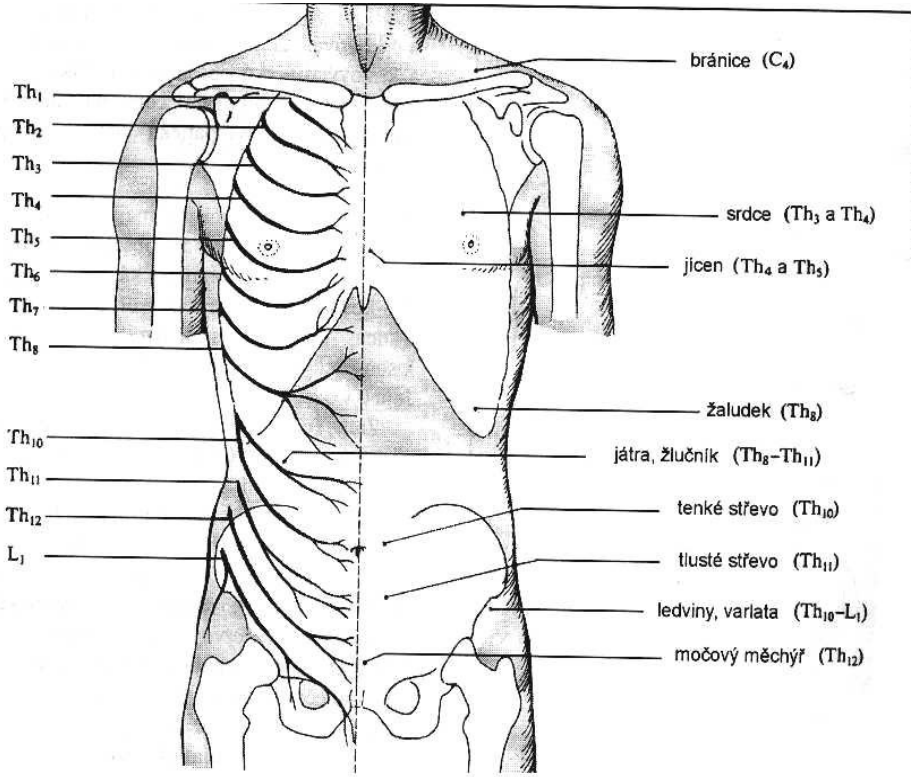
- 7 C, 12 Th, 5 L, 5 S a 4-5 Co
- spinal cord L1/2
- spinal cord cover
  (pia mater, arachnoidea, dura mater)
- ligamneta (ligg. supra- , interspinalia, lig. flavum)

- epidural a subarachnoid space



Skin dermatomas



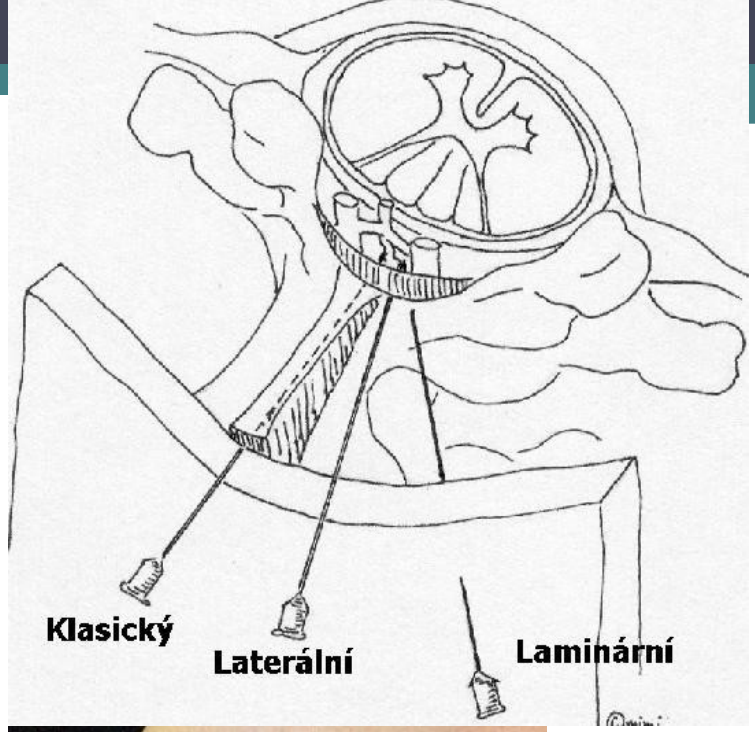


Central neuroaxial block

- Indication:
  - Surgery bellow umbilicus
  - Combined anaesthesia for abdom. surgery
  - Continual technic for postoperative pain relief
  - Labour analgesia and anaesthesia
- Contraindication
  - Patient´s refusal
  - Local infection
  - Hypotension, hypovolemia, shock
  - Valve stenosis - fixed cardiac output
  - Coagulopathies (warfarin, heparin)

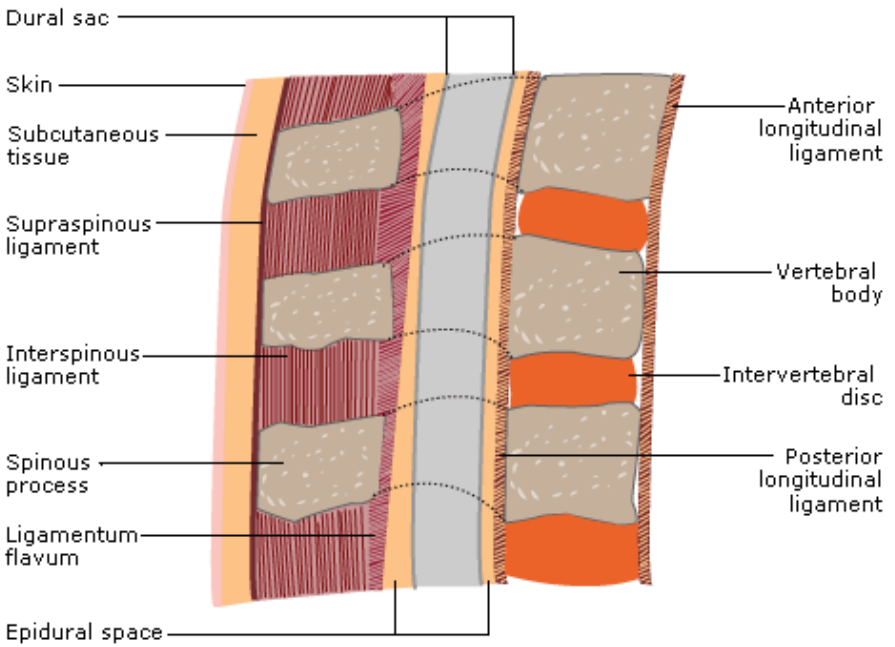
Systemic effect of central blockade

- Cardiovascular system
  - Sympathetic block
    - Hypotension
    - Reduced venous return
    - Relative hypovolemia
- Ventilation: small influence
- Urination: urinary retention


Klasický
Laterální
Laminární

Epidural anaesthesia

- Epidural space
  - posterior border: lig. flavum vertebral arches
  - Content: fat connective tissue, lymphatic vessels, vessels for vertebra and spinal cord, **radices of spinal nerves, spinal cord, spinal covers**
  - thickness of epidural space>
    - lumbar: 5 - 6 mm
    - thoracic: 3 - 5 mm
    - cervical: about 3 mm



Epidural anaesthesia

- Spread of anaesthetics:
  - Both direction from the end of needle or catheter
- Dose: 2 ml per segment
- Density of block depends on the concentration of LA used

Equipment

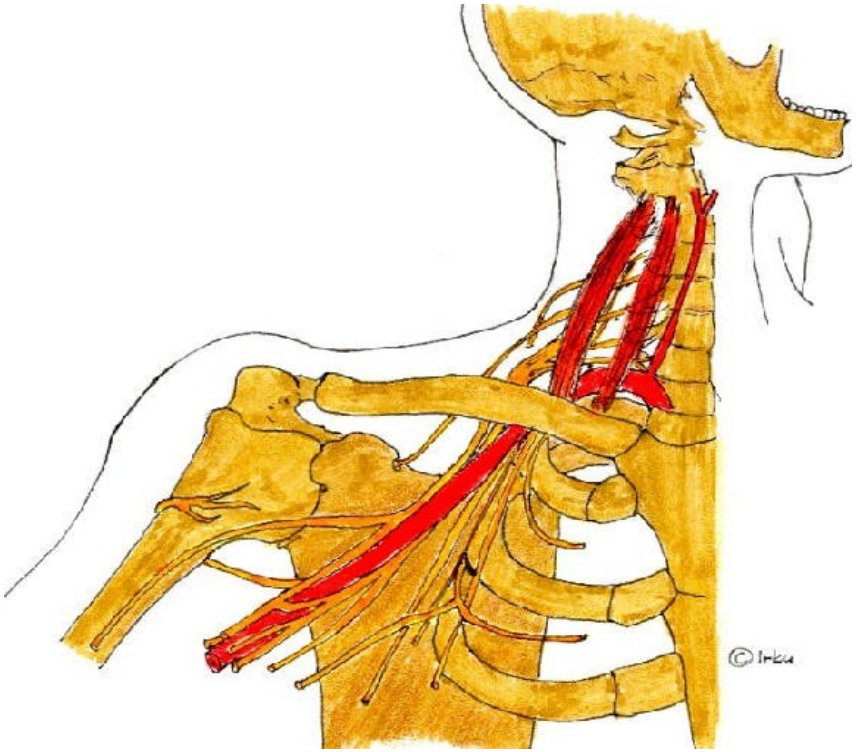
Lumbal epidural block

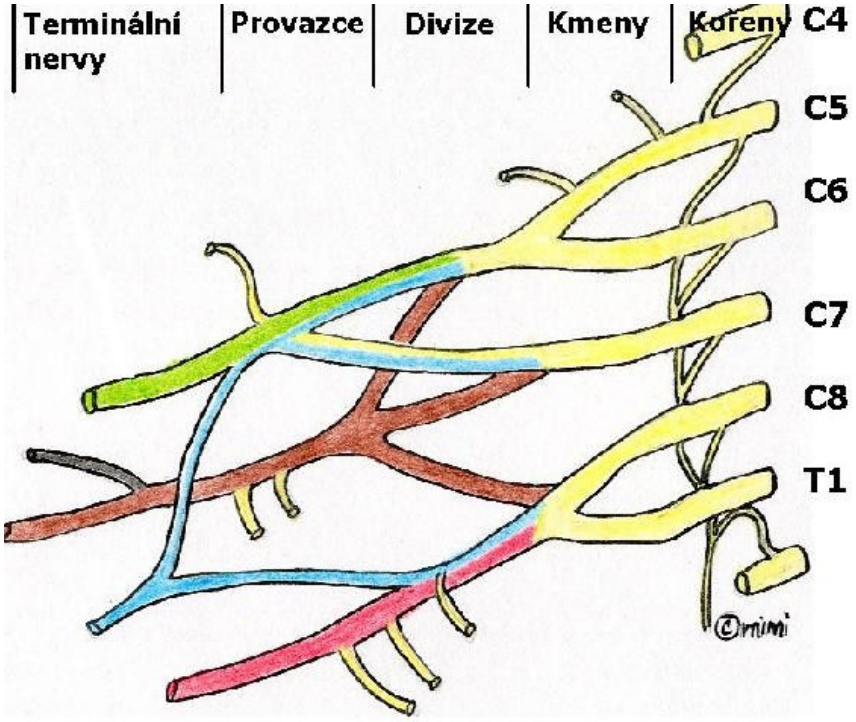
Cervical epidural

Peripheral blocks

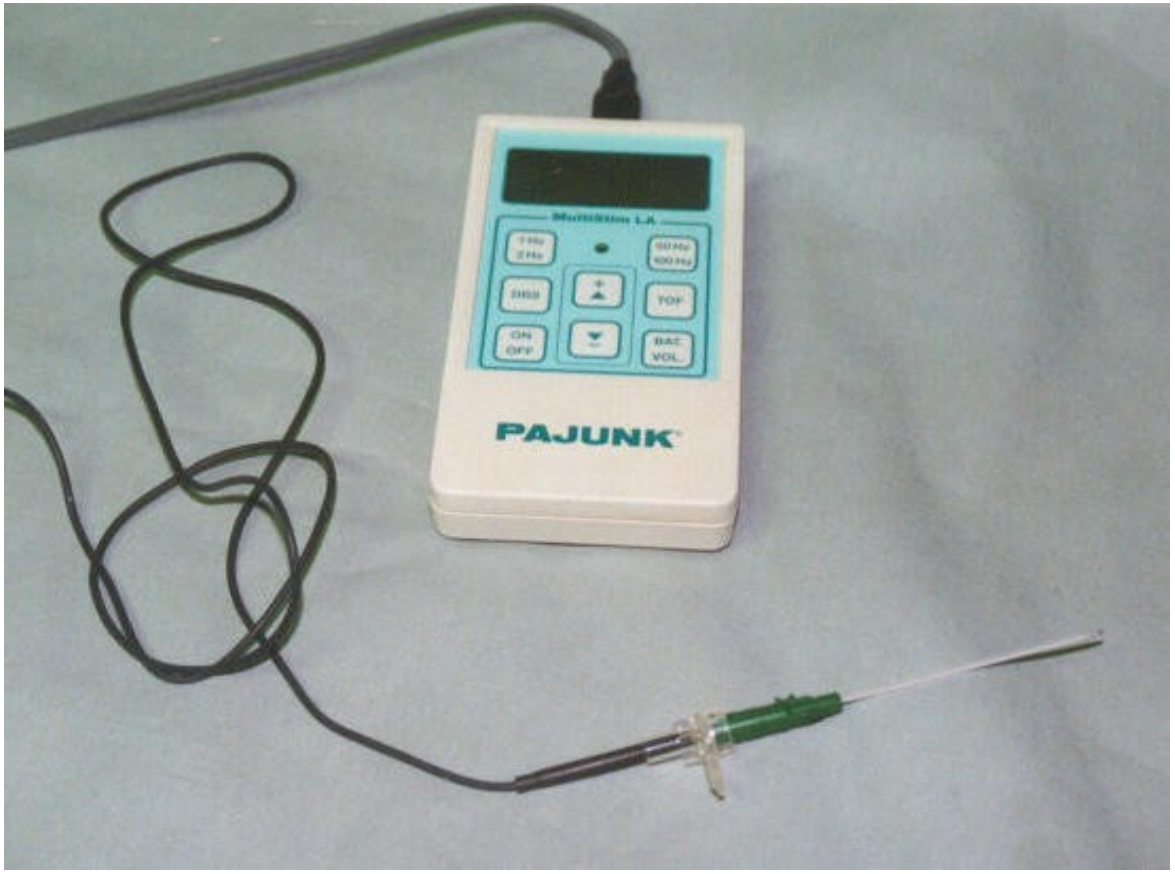
- Single nerves
- Nerve plexuses

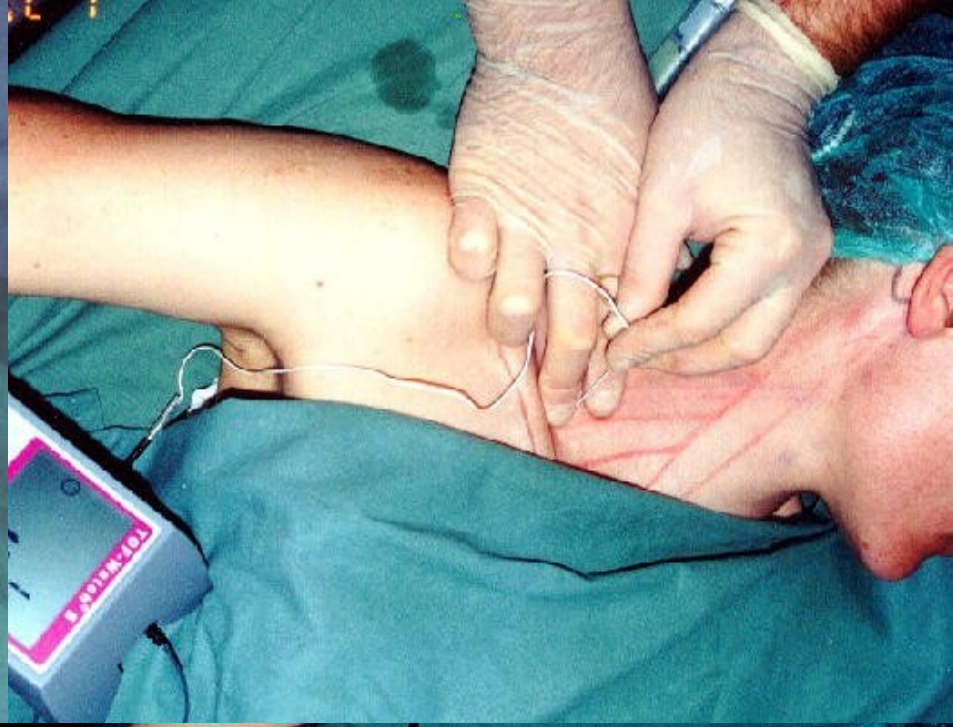
Plexus brachialis

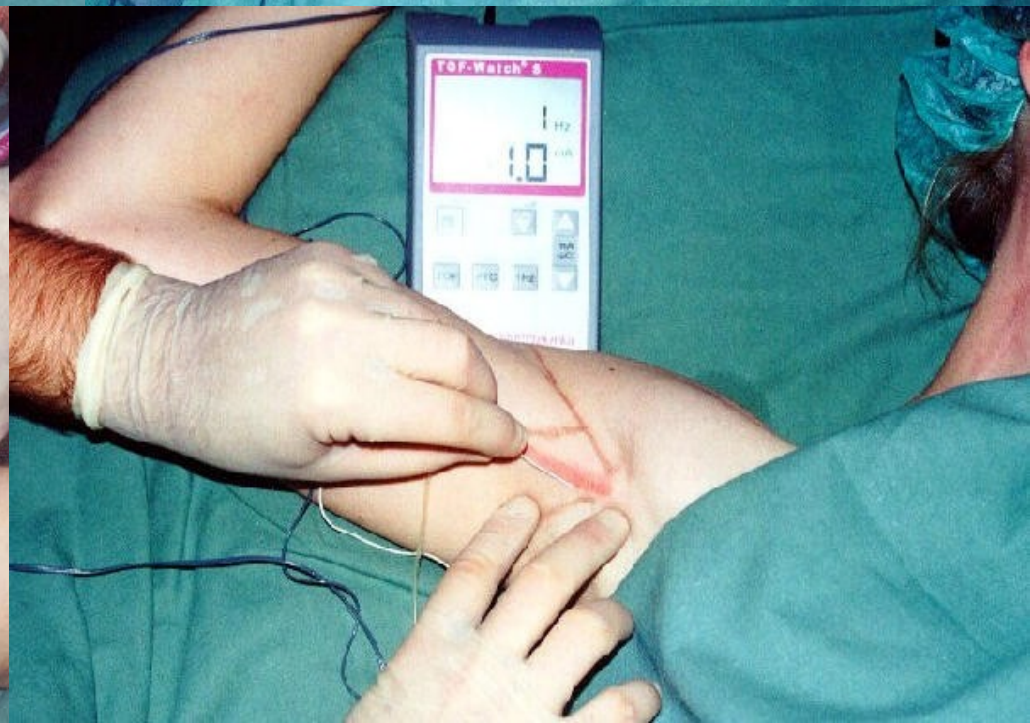




Stimulator




TOF-Watch® S


TOF-Watch® S
1 Hz
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Questions ?