

Local / regional anaesthesia

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ARK

Anesthesia = znecitlivění

anaesthetist

- general (narcosis)
- local / regional
- combined

Local anaesthetic

- reversible block
- Sodium ion canal (Na^+ to cell)

Nerve fibre

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

Nerve block - signs

- (B fibre) block of sympathetic = heating
- (C + A δ fibre) block of pain and heat
- (A β) ztráta pocitu doteku
- (A α) motorická blokáda

Local anaesthetics

potentially toxic!

- CNS
 - convulsion, coma, depression of breath!
 - lost of sensitivity around mouth, iron taste on tongue, somnolence, vertigo, tinitus (ringing), nystagmus, changes in seeing
- cardiovascular system
 - hypotension, bradycardia, colaps of circulation, asystoly or ventricular fibrillation!

Lokal anaesthetics

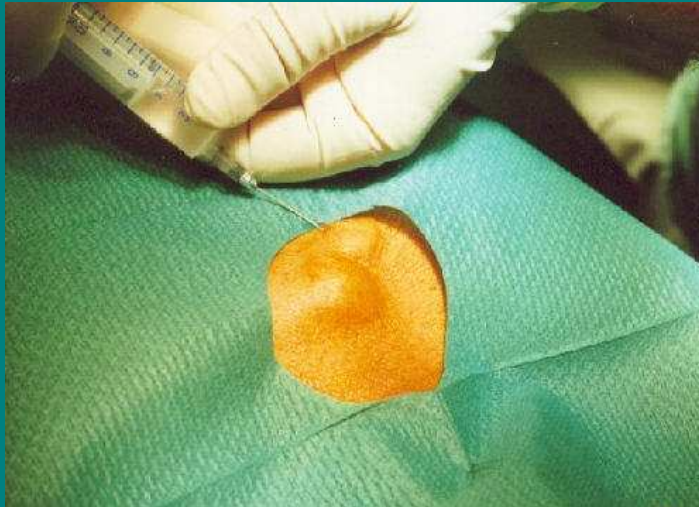
- aminoester
- aminoamid
- **examples:** lidokain, trimecain (Mesocain), bupivakain (Marcaine), prokain, artikain (Ultracain, Supracain), ropivakain (Naropin)

Types of anaesthesia

- **Local**
 - skin, mucosa
 - infiltration
- **Periphery block**
 - nerves
 - nervous cluster
- **Central block**
 - subarachnoidal (spinal)
 - epidural

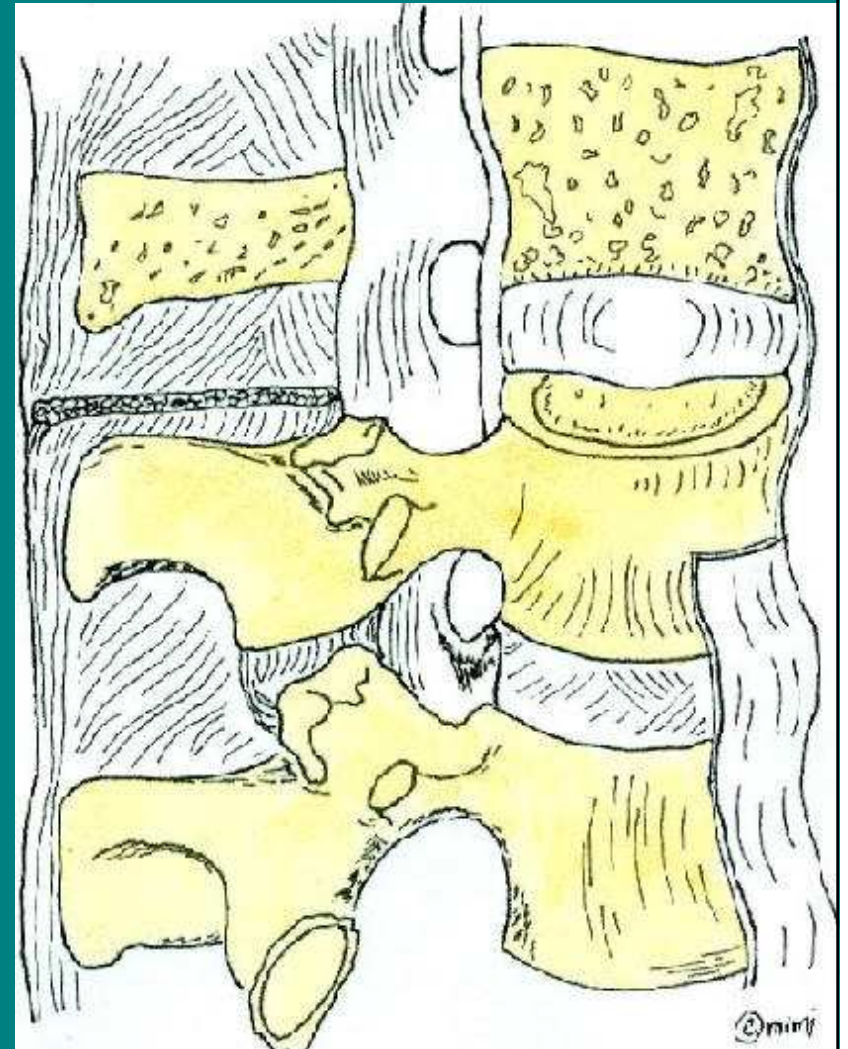
Local anaesthesia

- **Local anaesthesia**
 - superficial (topic, mucosa)
 - infiltration



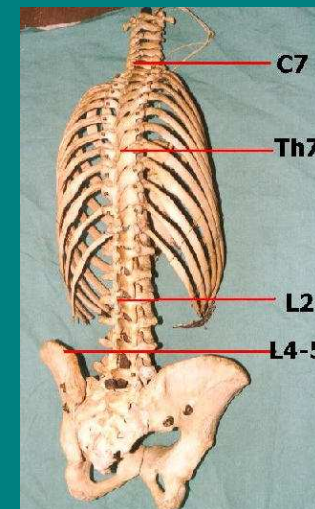
Central block

- epidural
- subarachnoideal (spinal)

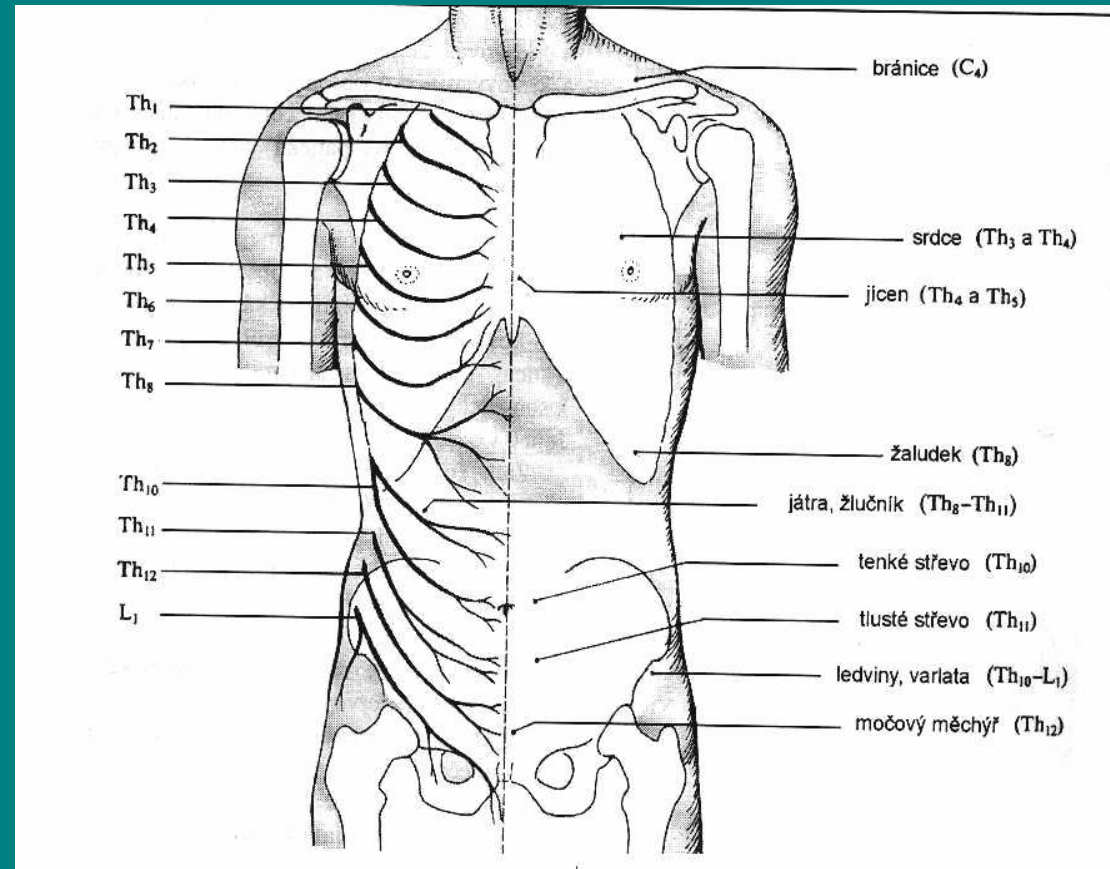
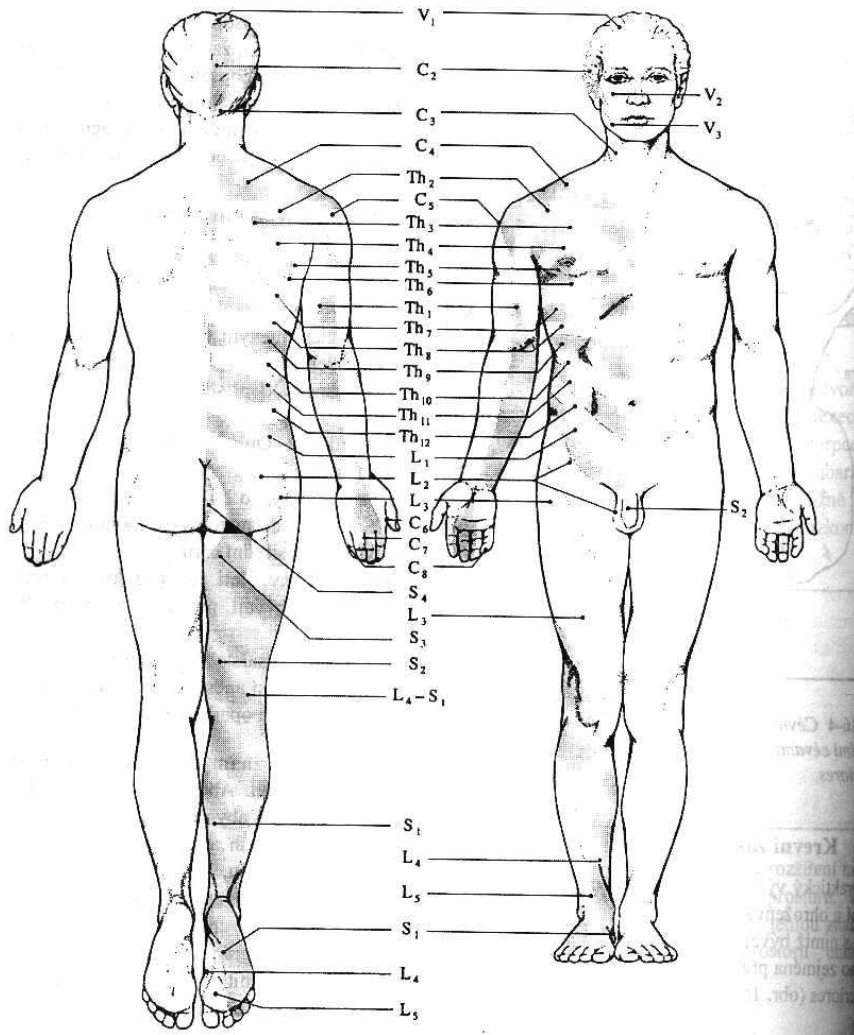


Anatomy of back bone canal

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



Míšní dermatomy



Central blocks

- Indication:
 - lower extremity, lower abdomen , perineum
 - part of combine anaesthesia
 - continual technic for treating of postoperative pain
 - childbirth analgesia and anaesthesia
- Contraindication
 - disagreement of patient
 - infection in place of prick
 - hypotension, hypovolemia, shock
 - valve stenosis - fixed cardiac output
 - blood abnormalities (warfarin, heparin)

Systemic effect

- Cardiovascular system
 - block of sympathetic
 - hypotension
 - stagnation of blood in veins, small vein return
 - relative hypovolemia
- Ventilation: small influence
- Urination: retention (block of urine bladder)

Subarachnoideal anaesthesia

Subarachnoideal space

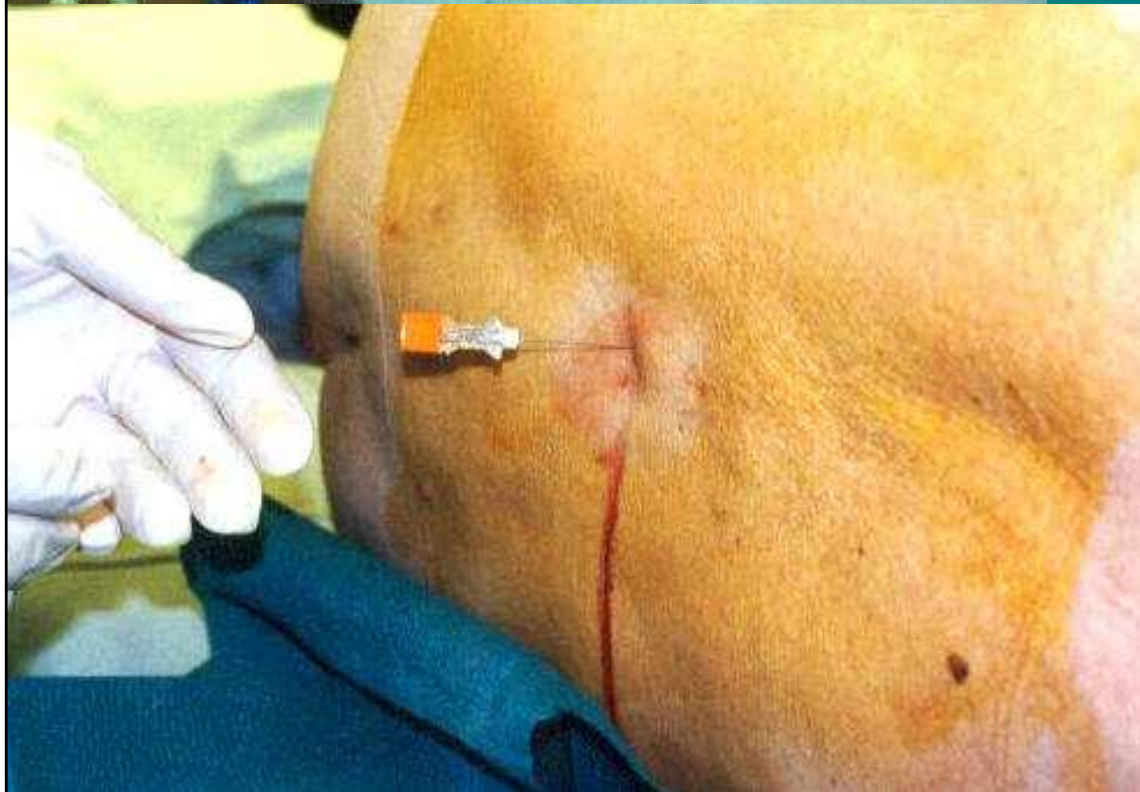
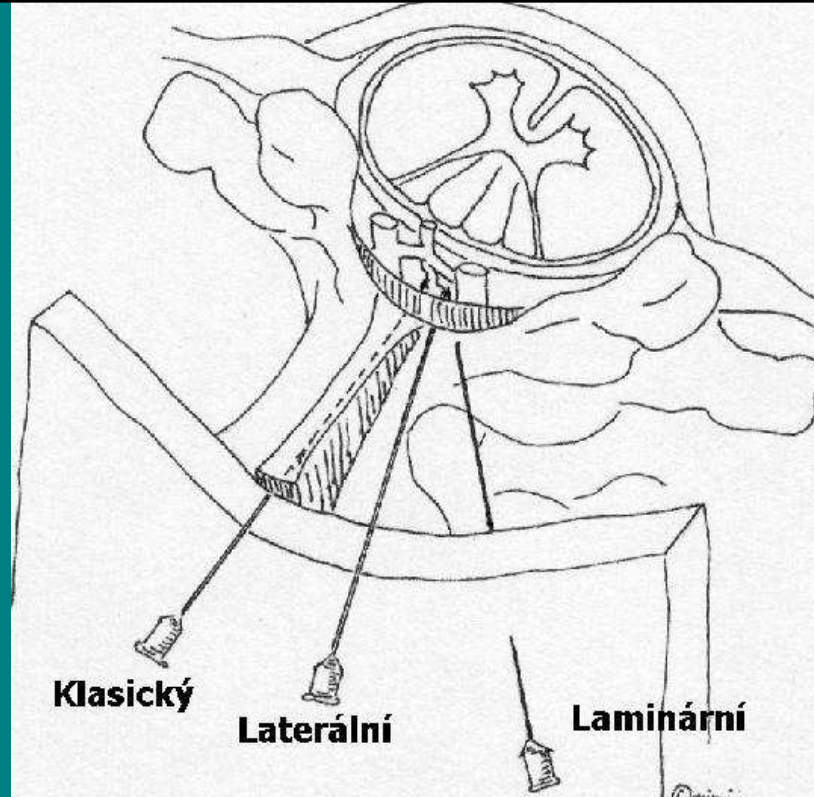
- wall: arachnoidea + dura mater
- content: spinal cord, nerves, cerebrospinal fluid

liquid in cerebrospinal fluid:

isobaric, hyperbaric, (hypobaric)

Dose: 2 – 4 ml (saddle block 1 ml)


Motoric block





**SUBARACHNOIDÁLNÍ
BLOK -
mediální přístup**

Autoři: A. Spálený, P. Michálek

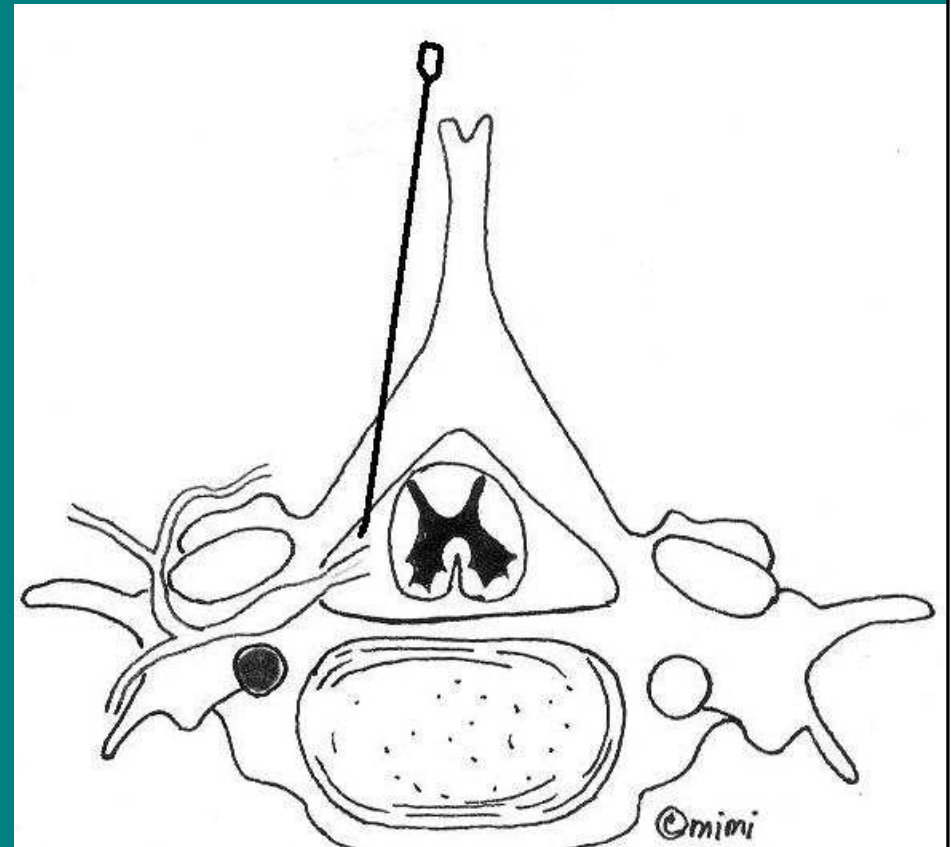


LATERÁLNÍ LAMINARNÍ
PŘÍSTUP DO
SUBARACHNOIDÁLNÍHO
PROSTORU

Autor: Pavel Michálek

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
 - part is disappear through intervertebral apertures, part diffuse to CSF and pith
- Doses: ower 150 cm 1 ml/segment + 0,1 ml/segment for each 5 cm

Equipment





Loss of resistance

technika "ztráty odporu"



Hanging drop





BEDERNÍ EPIDURÁLNÍ ANESTEZIE

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KRČNÍ EPIDURÁLNÍ ANESTEZIE

167
97+

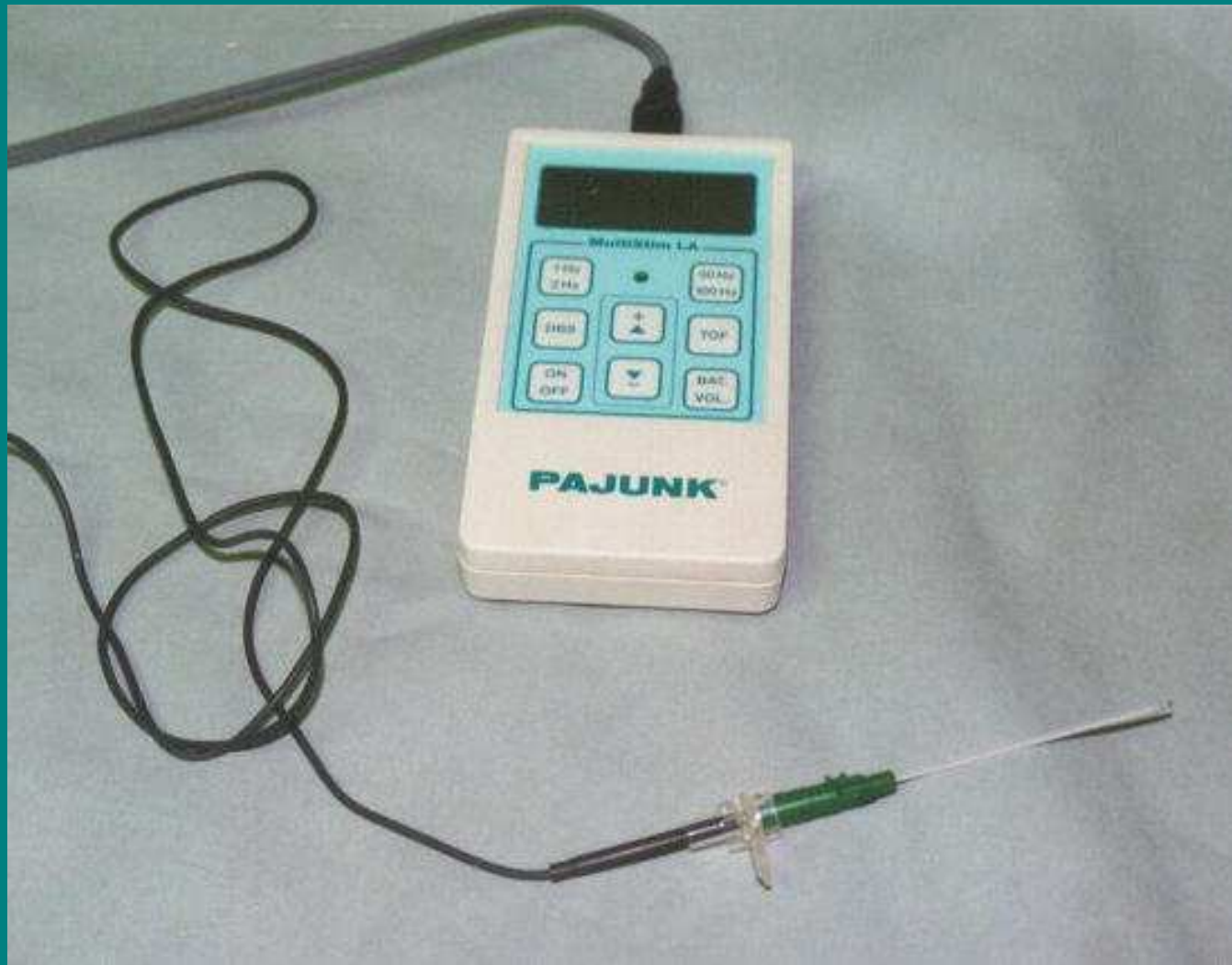
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HRUDNÍ EPIDURÁLNÍ BLOK S KATÉTREM

Autor: M. Moravec, P. Michálek

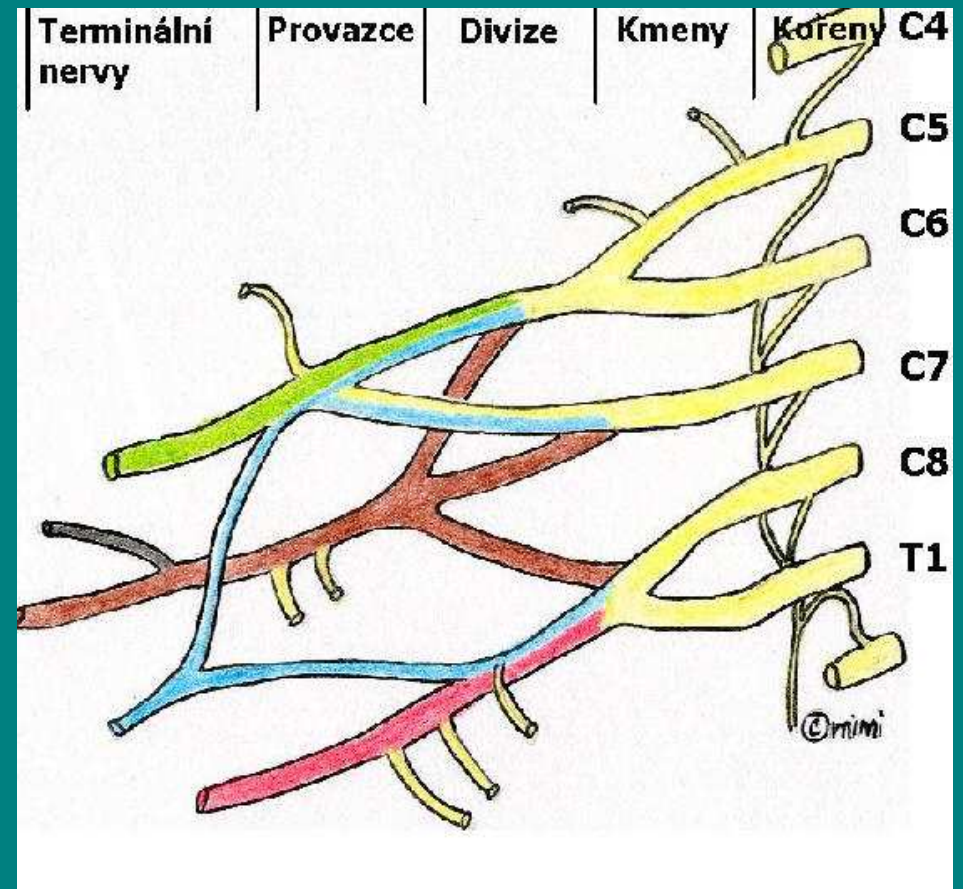
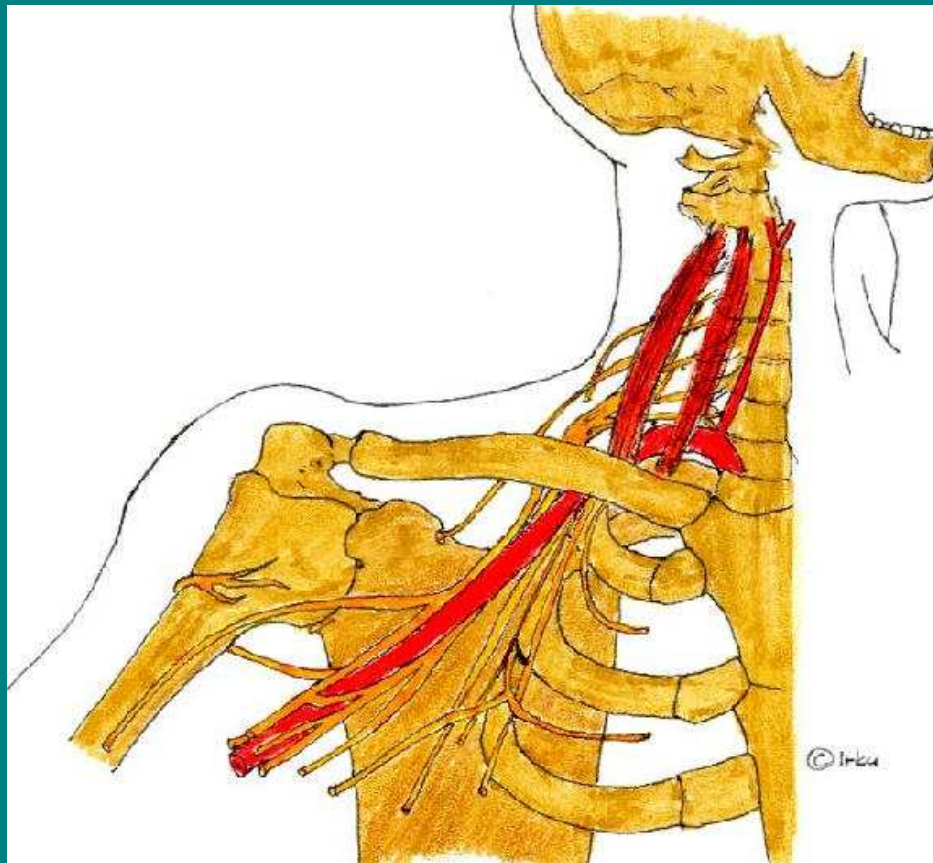
Stimulator

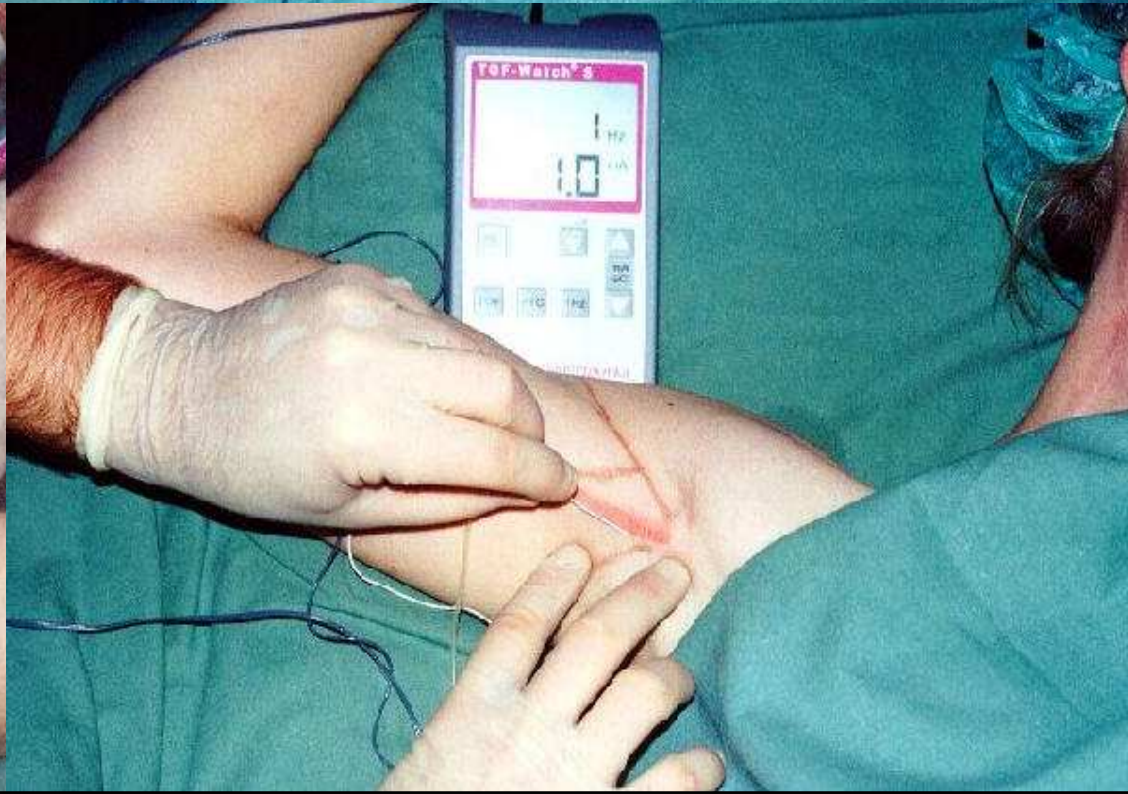
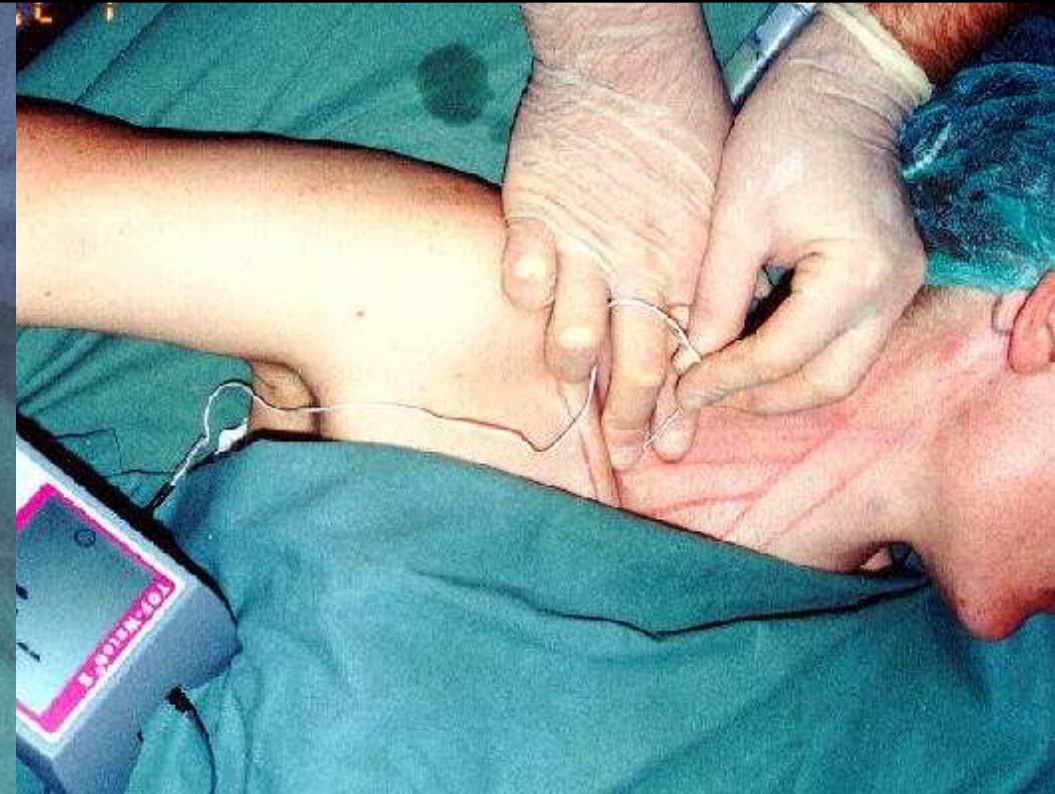
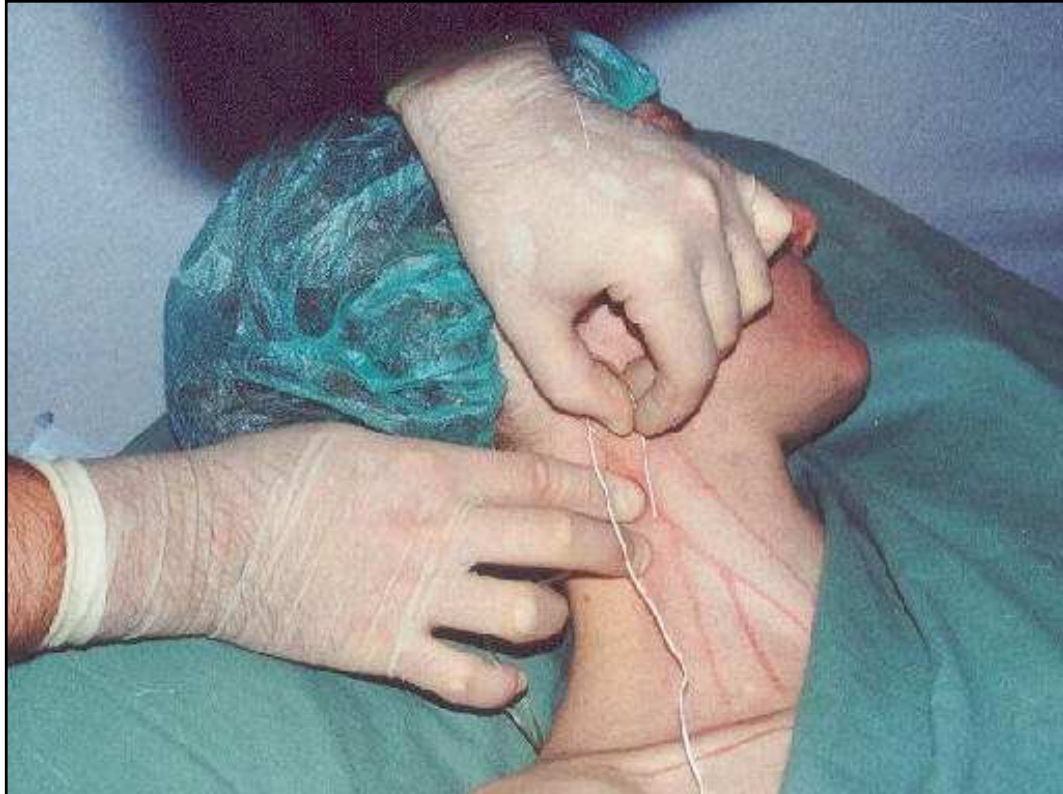


Peripheral blocks

- single nerves
- nervous cluster

Plexus brachialis





PARASKALENICKÝ PŘÍSTUP K BRACHIÁLNÍMU PLEXU



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INFRAKLAVIKULÁRNÍ PŘÍSTUP SEC NALOS



Autor: Pavel Michálek

AXILLÁRNÍ BLOK

A photograph of a patient in an operating room. The patient's right arm is raised and secured to a metal arm holder. A clear plastic catheter is inserted into the axilla (armpit) area. A small electronic device with a green screen is connected to the catheter and sits on a green surgical drape. The patient is wearing a white hospital gown. The background shows surgical equipment and a white cloth.

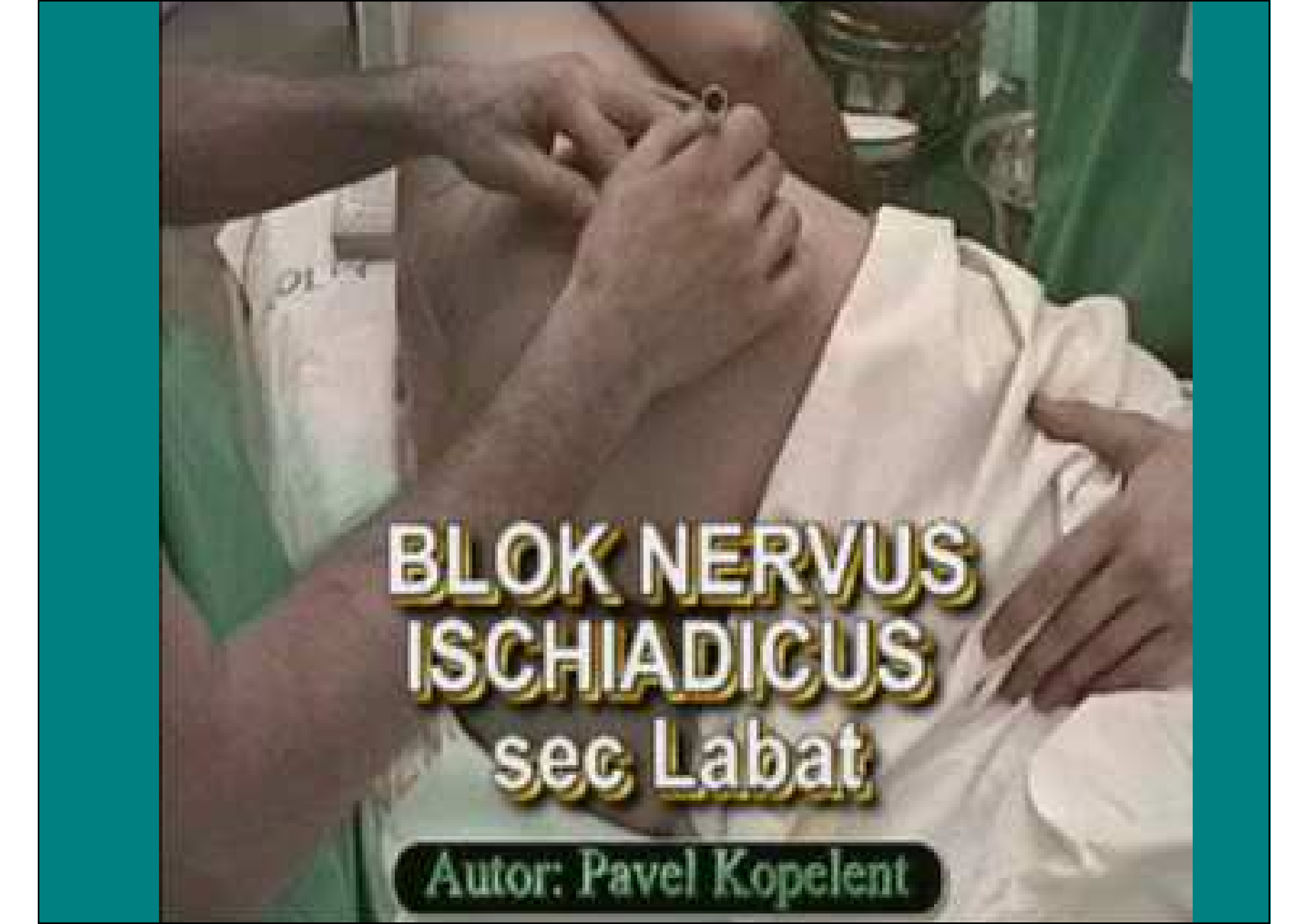
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INFRAKLAVIKULÁRNÍ PŘÍSTUP

sec Nalos s katétrem



Autor: Pavel Michálek

A close-up photograph of a medical professional's hands performing a procedure on a patient's arm. The patient is lying on a table covered with a white cloth. The professional is wearing a white lab coat and is using a small surgical instrument. The background shows a blurred operating room environment with green curtains and medical equipment. The text is overlaid on the lower half of the image.

**BLOK NERVUS
ISCHIADICUS
sec Labat**

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BLOK
NERVUS FEMORALIS

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25 11 2001