FACULTY OF MEDICINE
MASARYK UNIVERSITY
UNIVERSITY HOSPITAL BRNO

DEPARTMENT OF PAEDIATRIC
ANAESTHESIOLOGY
AND INTENSIVE CARE MEDICINE

Acute and chronic pain

Dr. Štoudek, Dr. Křikava

FAKULTNÍ
NEMOCNICE
BRNO

Prof. Henrik **Kehlet**

Prof. Narinder **Rawal**

Acute Pain Service

Definition - Merskey 1967, WHO, IASP

An unpleasant sensory or emotional experience associated with actual or potential tissue damage or described in terms of such damage

„Pain is, what patient feels, when he says, that he feels pain “

Margo Mc. Caffery

Difficult to apply definition

- Small children
- Verbal handicapped adults
- Mentally disabled
- Patients with dementia
- Patients suffering from alexithymia

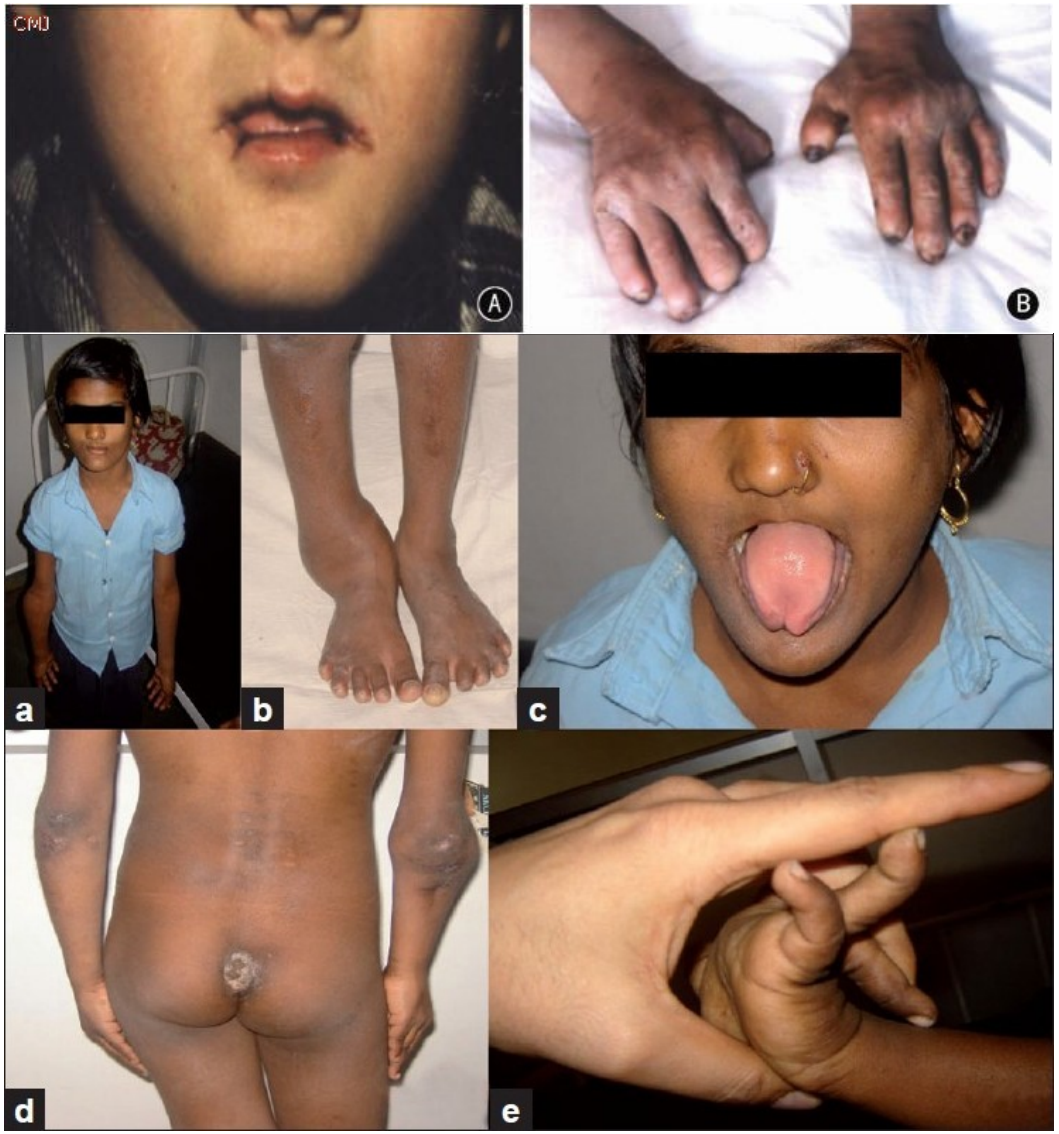
Pain

= subjective experience

Could be affected:

- Age
- Gender
- Cultural habits
- Previous experience

Congenital loss of feeling of pain



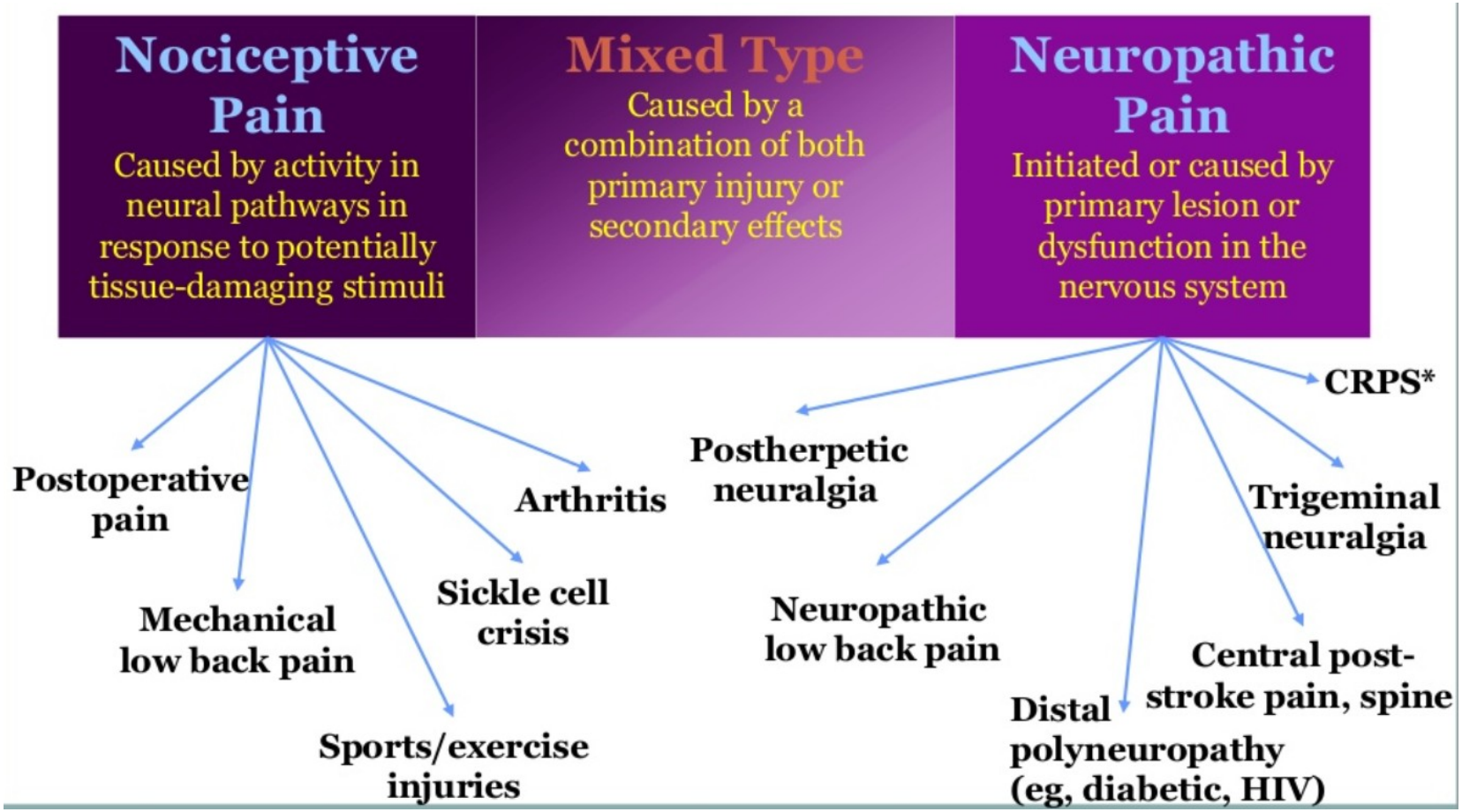
Patophysiology of pain

- Nociceptors, polymodal nocisensors
- C fibre nociceptors
- A fibre nociceptors
- Posterior horns of spinal cord
- Tractus spinothalamicus, spino-bulbo thalamicus, spinoreticularis
- Brain pain centers (gyrus precentralis….)
- Supressive mechanisms (GABA, opioids..)

Classification of pain

1. Acute pain x chronic pain
2. Nociceptive pain x neuropathic pain
3. Psychogenic pain
4. Malignant pain x non-malignant pain
   - Pain caused by cancer (*infiltration of bone, viscera…*)
   - Pain as sequelae of cancer treatment (*post-surgical, post chemotherapy, post radiotherapy…*)

Classification of pain



Acute pain

- Useful pain, physiologic pain
- AP is symptom of disease
- Fulfill basic role of pain – protect organism against injury, disease …
- Short duration – hours, days.. **Max. 3 months**
- Duration of acute pain is adequate to causality of this pain
- Sharp, itching, localized pain,
- Localization is the same as causality
- Stimulation of sympathetic syst.
- Main risk of AP is its chronification

Chronic pain

- CHP is syndrome, disease
- Long duration – more than 3 months
- Usually connected with depression
- Parasympathetic stimulation
- Constipation
- Social isolation

Somatic pain

- *Cause*: stimulation of nociceptors

- *Types*:
  1. Somatic (muscles, skin, joints)
  2. Visceral (internal organs)

- *Character*:somatic pain is good localized, sharp
  - Visceral: dull and difficult for localization, sometimes reffered pain

Neuropathic pain

- *cause*: dysfunction of nerve systems (peripheral, central, vegetative)
- *types*:
  1. peripheral (peripheral nerves, nerve roots),Trigeminal neuralgia, post herpetic neuralgia
  2. central (brain, spine) central post stroke pain

- *Character*: stable pain, paroxysmal pain with intensive pain atacks, alodynia) trigeminal neuralgia, postherpetic neuralgia

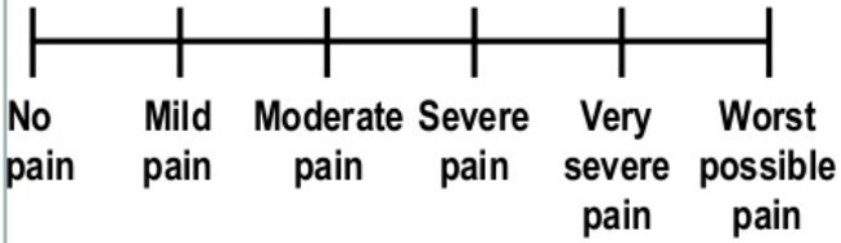
Other types of pain

- **Mixed pain:**
  - Pain contained nociceptive and neuropathic type of pain (FBSS)

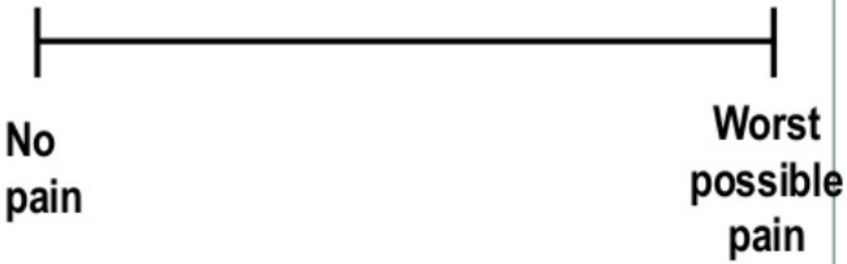
- **Psychogenic pain**

Pain measurement

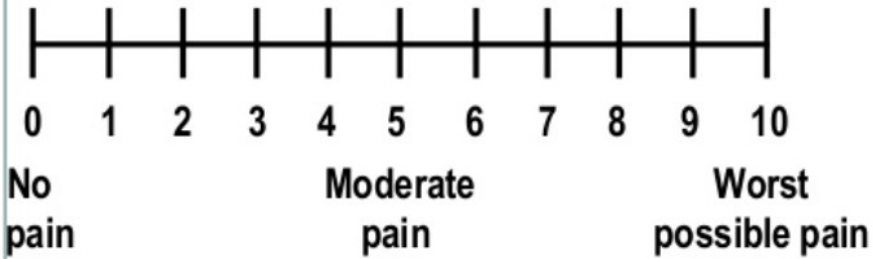
Verbal Pain Intensity Scale



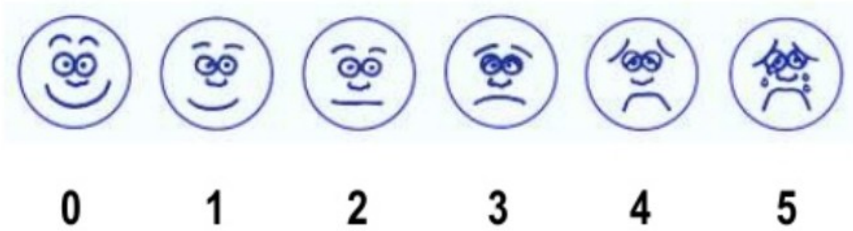
Visual Analog Scale



0–10 Numeric Pain Intensity Scale



Faces Scale



Possibilities of pain treatment

- Pharmacotherapy
- Physical treatment and rehabilitation
- Psychotherapy
- Invasive pain treatment methods
- „Alternative“ treatment approaches (homeopathy, acupuncture ….)

Acute vs. Chronic Pain Management

Acute Pain

Most often treated with:

- NSAIDS
- Opioids
- Local anesthetics
- Splinting
- Positioning changes
- Ice

Chronic Pain

Most often treated with:

- Anti-seizure medications
- Anti-depressant medications
- NSAIDS
- Implantable devices
- Psychological therapy
- Acupuncture

When everything else fails and benefits outweigh risks

- Opioids

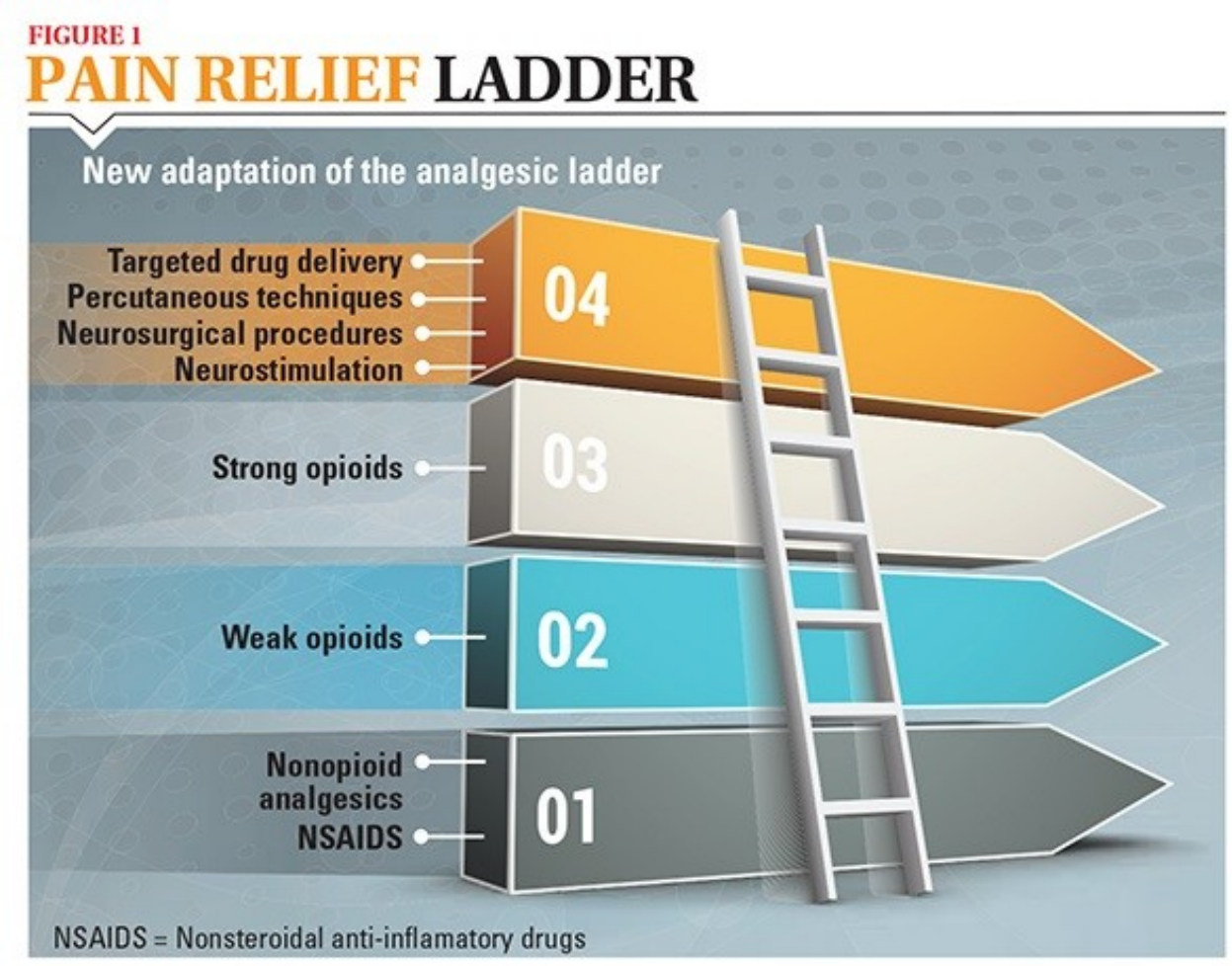
Acute Pain Service

- Provides 7 days per week, 24 hour consultative services every day of the year.
- Staffed by anaesthesiologists, nurse practitioners
- Manages IV PCA (patient controlled analgesia), epidural catheters, nerve block catheters.

Center for Pain Management

- The Pain Center is located in the Ambulatory Care Pavilion
- Treatments offered
  - Comprehensive evaluations
  - Epidural steroid injections
  - Spinal injections
  - Nerve blocks
  - Psychological evaluation and treatment
  - Opioid risk evaluation

WHO ladder of pain treatment



WHO 3 steps analgesics ladder

- For mild pain, use non-opioid first
- When pain persist or increases, add an opioid
- If pain becomes more severe, increase the opioid potency or dose
- Schedule doses on around-the-clock basis, with additional PRN doses-rescues

Adjuvant analgesics

- Anticonvulsants
- Antidepressants
- Corticosteroids
- Neuroleptics
- Anxiolytics
- Muscle relaxants
- Anesthetics
- antispasmodics

Analgetic of the I step

- Analgetic – antipyretic:
  1. Paracetamol (acetaminophen)
  2. NSA (non steroid antiphlogistic):
     - non selective COX inhibitors (ibuprofen, diclofenac, naproxen, indometacin)
     - COX II preference inhibitors (nimesulid, meloxicam)
     - COX II selective inhibitors (celecoxib, parecoxib (Dynastat), valdecoxib)
     - (Arcoxia)

Analgetic of the II step

Weak opioids:

- Codeine (max. 240 mg/d)
- Tramadol (max. 400 - 600 mg/d; μ agonist, norepinephrine and serotonin reuptake inhibitor)
- Hydrocodone (DHC) max 240mg/d
- Oxycodone in combination with nonopioid
- Tapentadol (μ agonist, norepinephrine reuptake inhibitor)

Analgetic of the III step

- Morphin SR
- Fentanyl
- Oxycodone
- Morphin IR
- Buprenorphine
- Hydromorfone
- Methadone

The most frequent mistakes in chronic pain treatment

- Doctors don´t use advantageous combinations of different analgesics groups (opioids + NSA, NSA + paracetamol)
- In case of increasing analgesics combinations (step up on the WHO leader) change non opioid remedy to weak opioid – instead to add weak opioid
- Dosage of drug inappropriate to pharmacokinetics of drug (usual slow release (SR) preparates last for 12 hours)
- Insufficient dosage of opioid, they are untimely changed
- Combinations of different NSA (indomethacin supp + ibuprofen)
- Untimely cancelling treatment due to AE, opioids related AE disappear during 2 weeks (exclude constipation) Occurrence of AE is reason for its treatment – no cancelling

Invasive Pain treatment - indications

- In case of lack of effect of pharmacotherapy
- Pharmacotherapy with severe adverse event
- Supplement of Pharmacotherapy

Types of blockades

- Reversible x irreversible
- Vegetative x somatic
- single x repeated x continual
- Diagnostic x prognostic x therapeutic

Division of blockades due to localisation

- Local application of LA (reflexive blockades, trigger points, tender points, painful scars, intraarticular applications (SI? …)
- Peripheral nerve blockades (axillar, and intercostal nerve block)
- Paravertebral blocks
- Central (spinal) block (epidural, subarachnoid)

Epidural application of steroids

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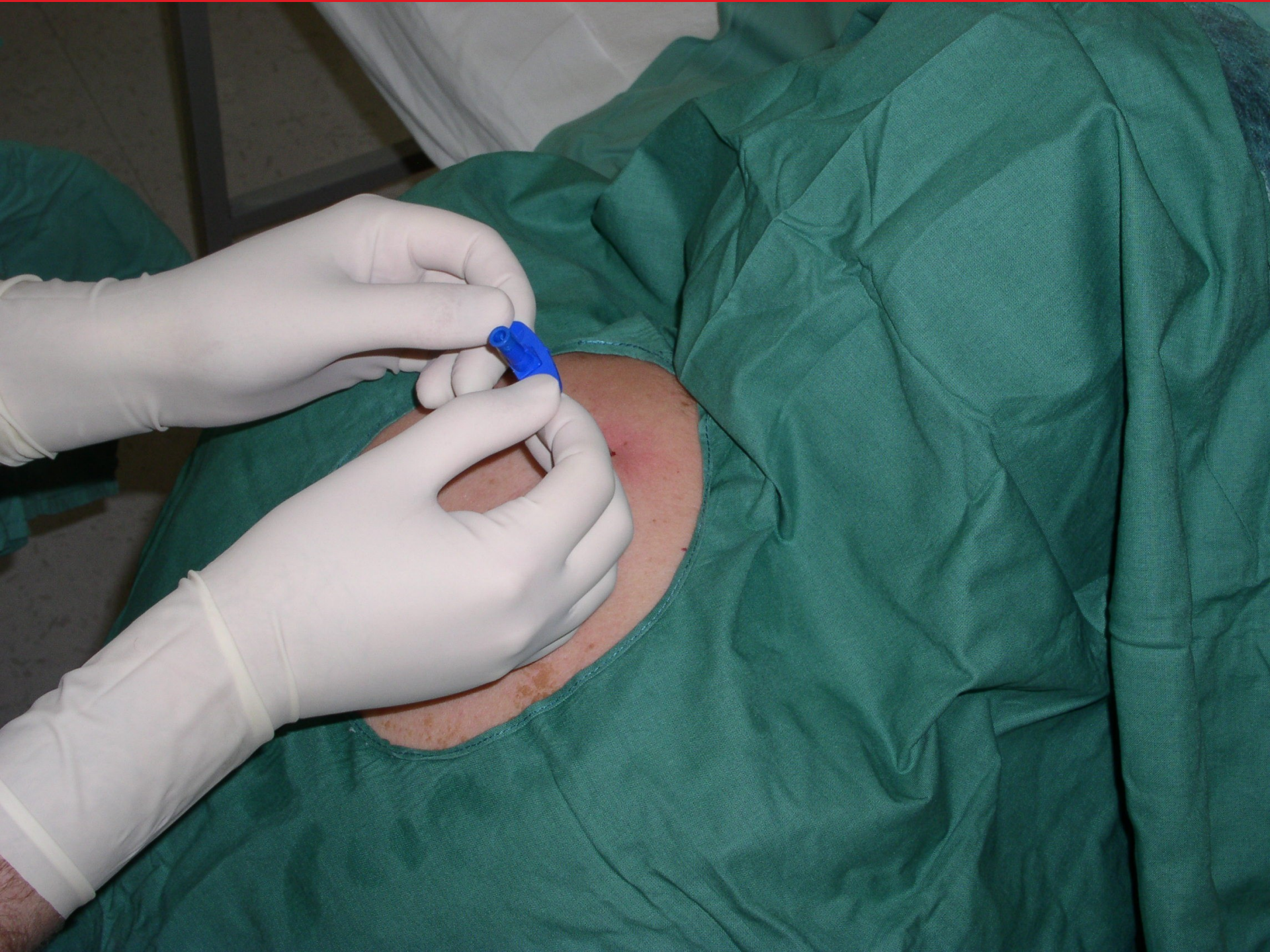
Indication

- Acute (days) and subacute (weeks up to 3-6 months) radicular pain (pain irradiating do leg) and caused by intervertebral disc herniation.
- CT exam.
- Patient is not indicated to back surgery

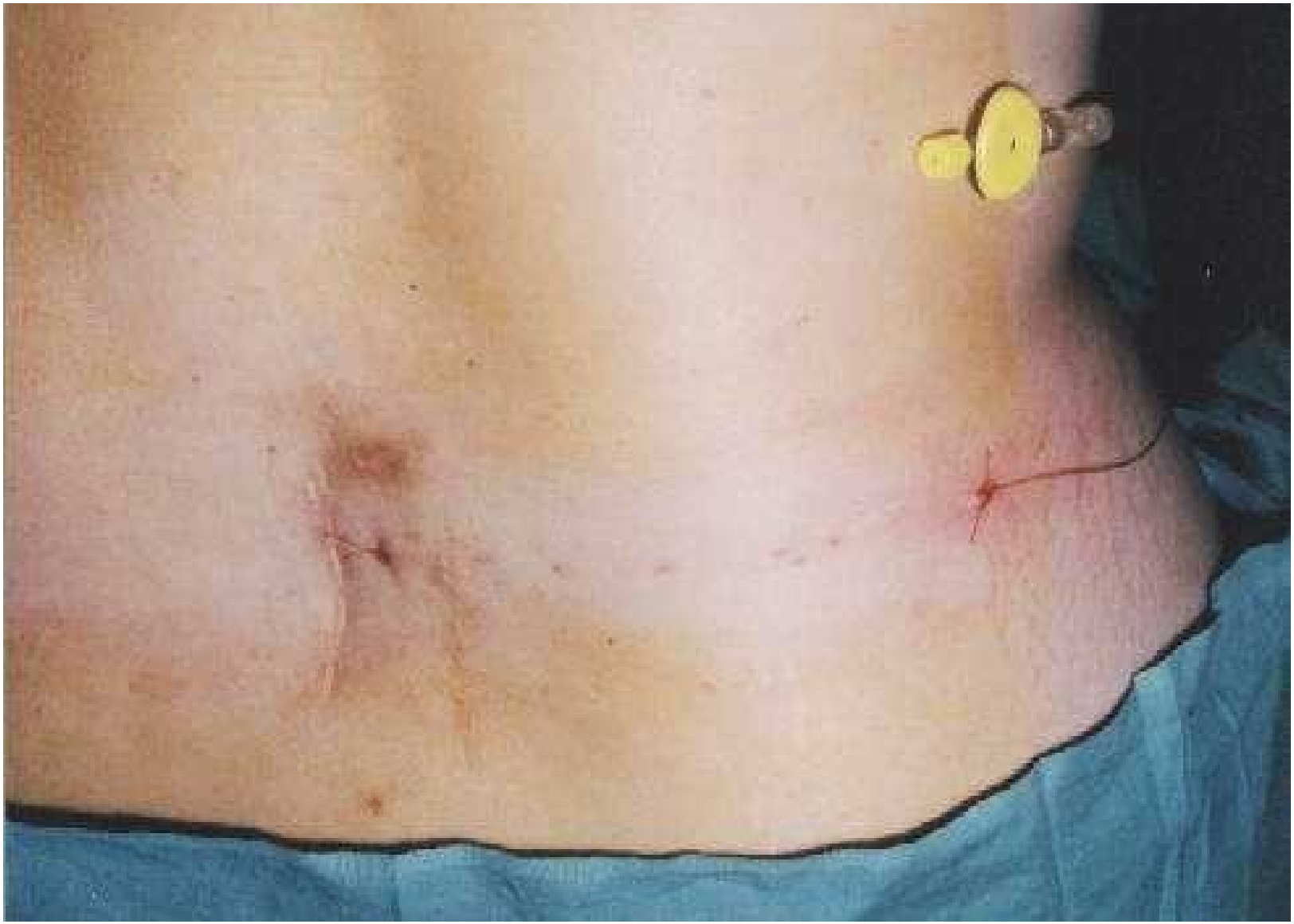


Recommendation after a application

- 2 weeks of resting regime
- First improvement of pain during 2-3 weeks
- 4 weeks next visit in pain amb.
- From 6 th moth after appl. Started rehabilitation
- Recommended daily exercising (15-20 min) - improve body muscle unbalance

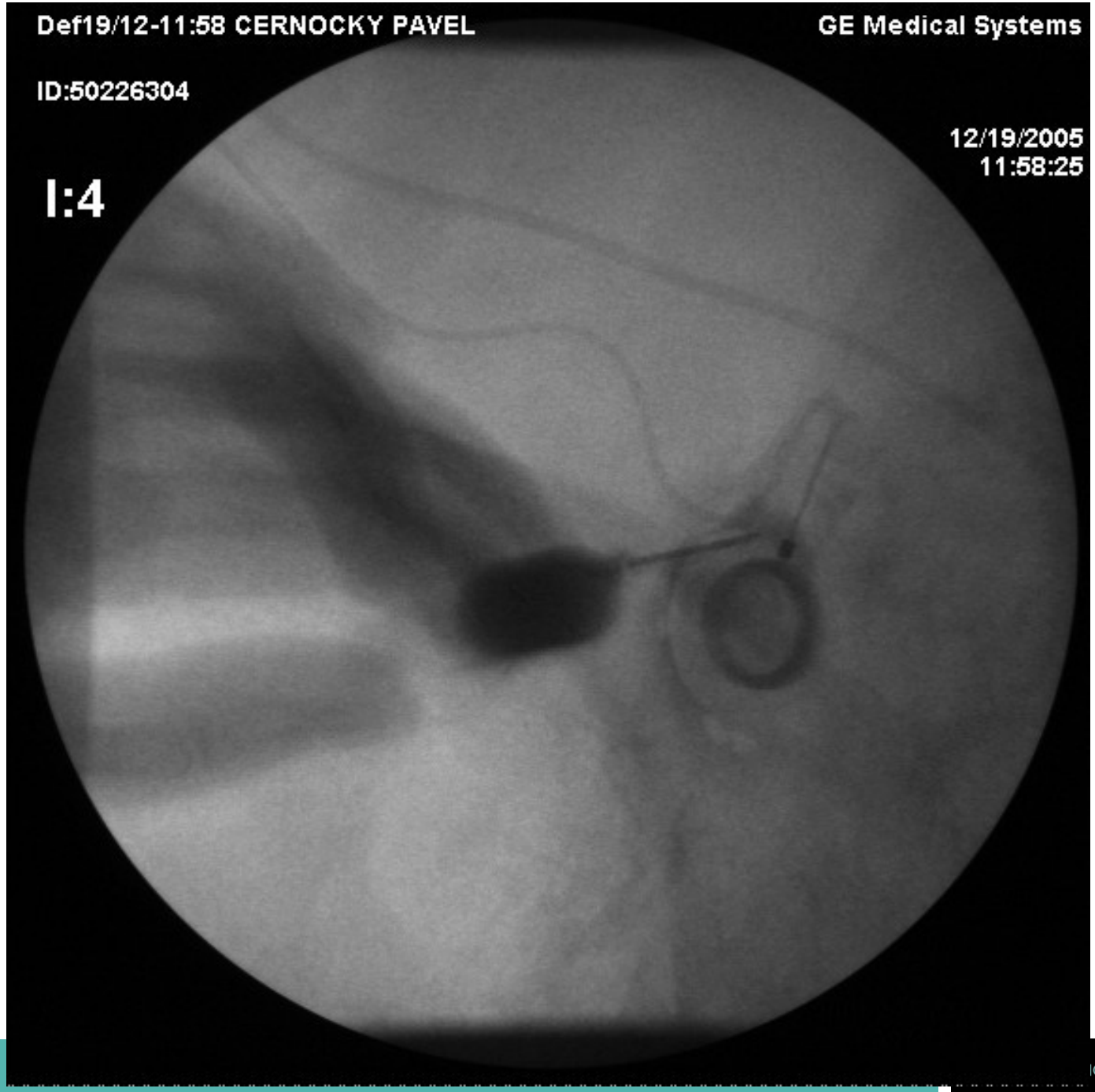
Subarachnoidal analgesia

- Single shot – before surgery – 24 hours post surgery analgesia
  - LA + morphin spinal 0,2-0,3 mg
- Subarachnoidal catheters
  - Spinocath
- Subarachnoidal ports



Subarachnoidal ports

- Treatment of chronic pain – moths, years (FBSS, Cancer)
- Patient or his family training of applications
- To Be prepare to solve complications of this treatment method (CNS infections, local infections, technical complications, withdrawal syndrome)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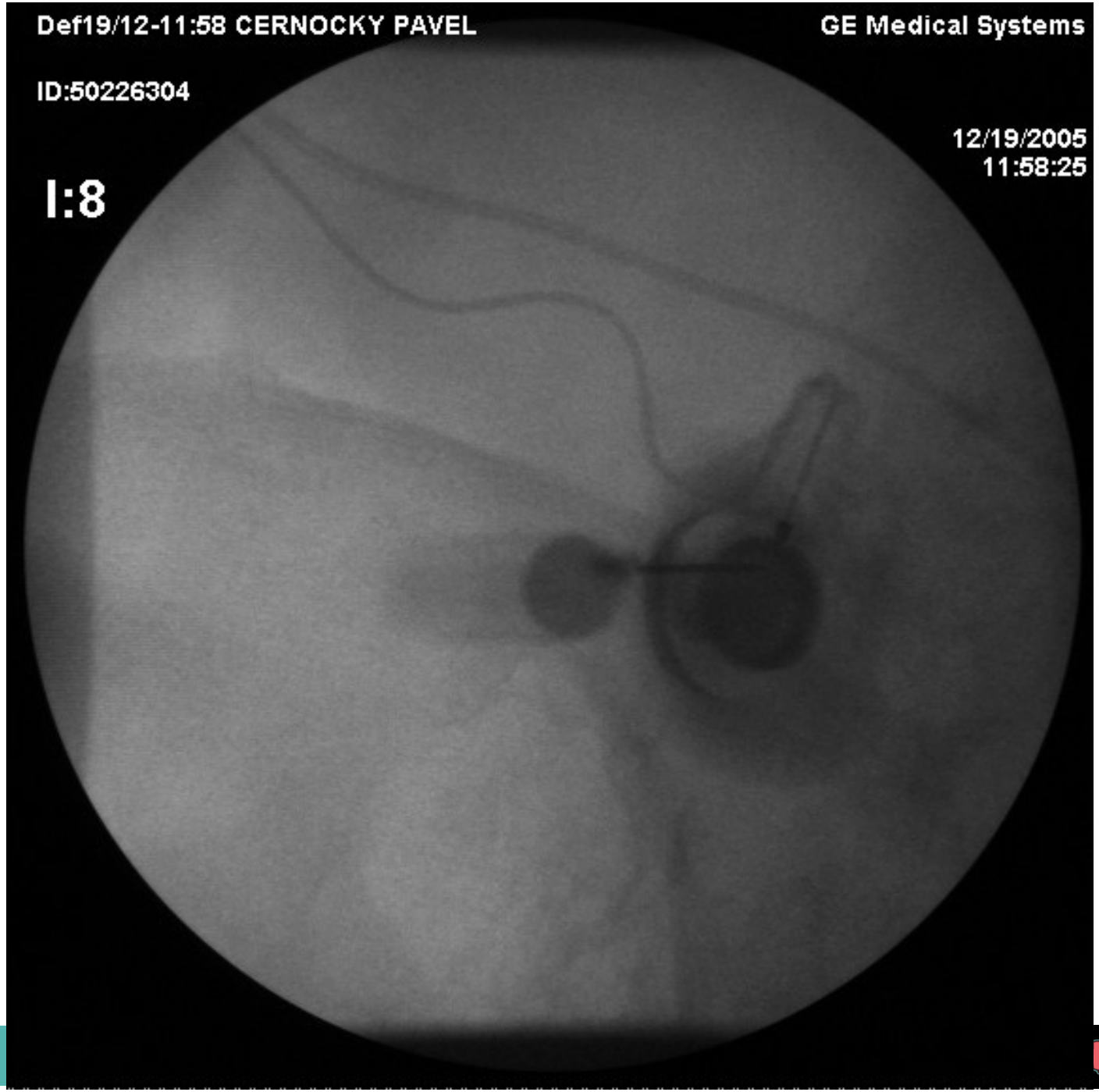
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Neuromodulation

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Neuromodulations centres in CZ

- FN Homolka
- FN Motol
- ÚVN Praha
- FN Olomouc
- FN Brno
- FN u sv. Anny v Brně

Necessary pre-implantation examinations

- Neurologic
- Psychologic!!!!
- Psychiatric
- Immunology
- Orthopaedic or neurosurgery
- Summary of health condition from GP
- Algeziology exam
- Positive result of test period

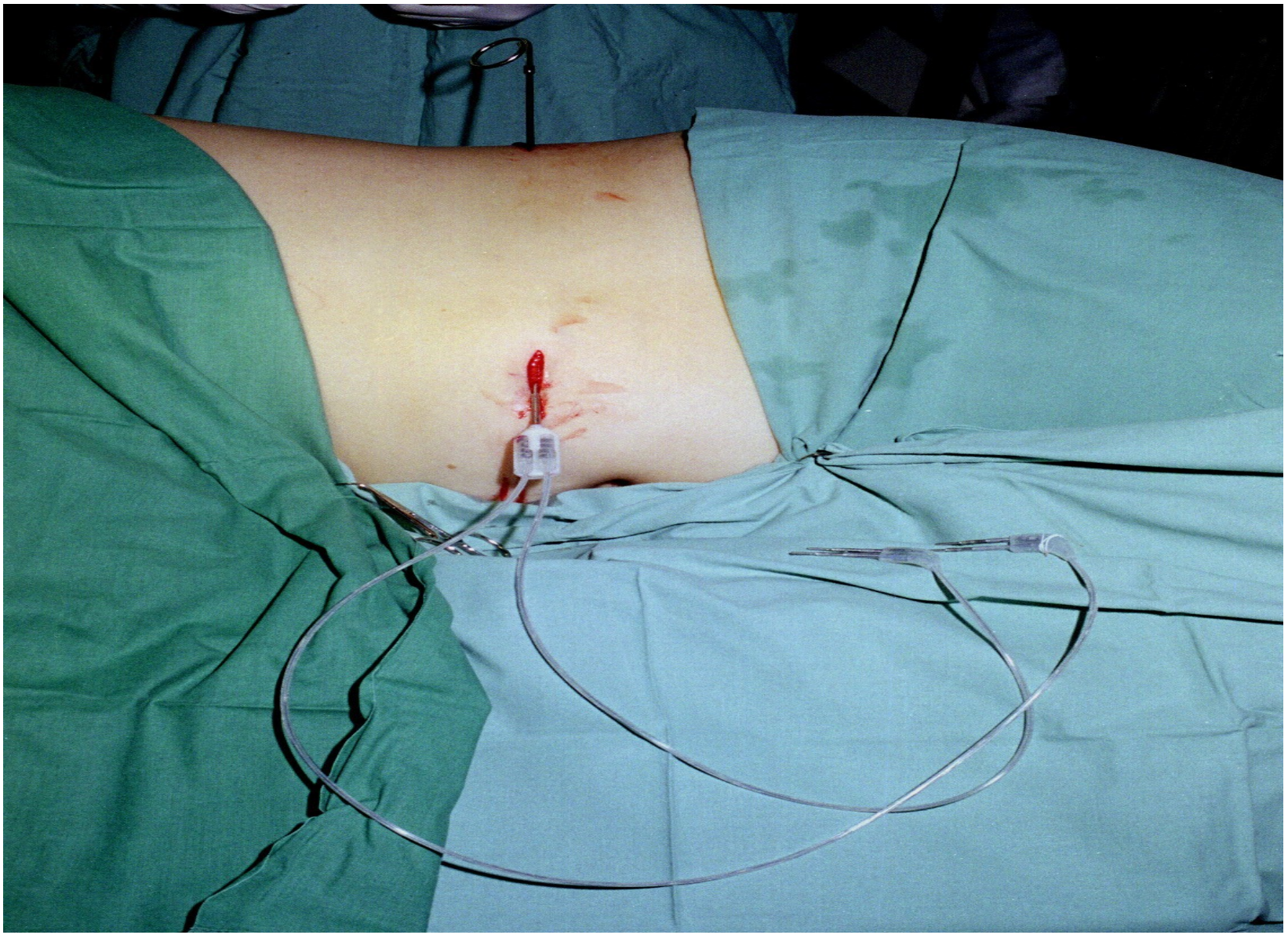
Indication

SCS – spinal cord stimulation

- Predominant neuropathic lower limb pain

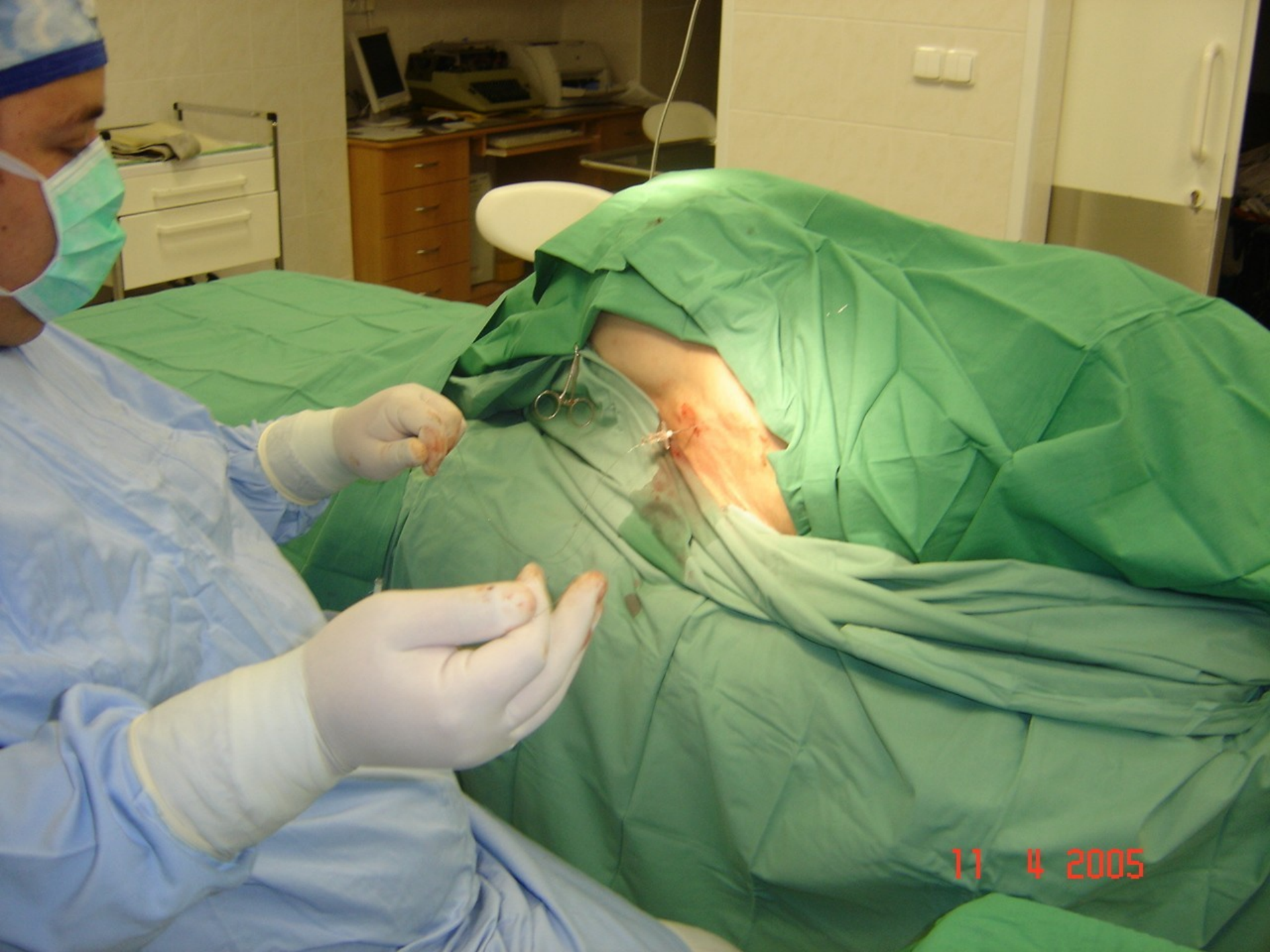
Subarachnoid pumps

- Predominant low back pain



Subarachnoidal programmable pump – test period

- Insertion of subarachnoid catheter
- Connecting of external programmable pump
- Setting of adequate mode for application
- 1 week in patient, 1 week out patient (better simulation of normal daily life of pat.)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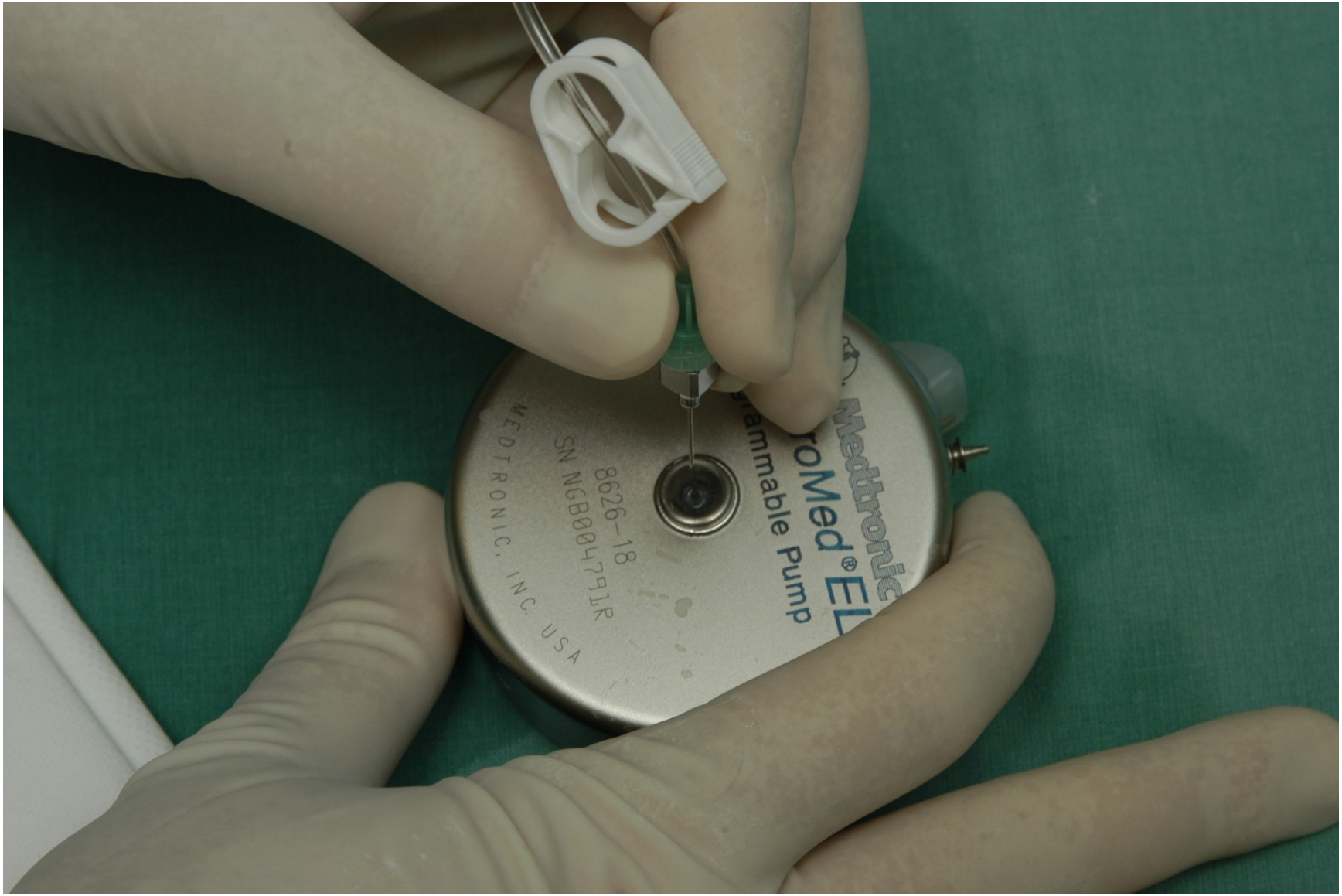
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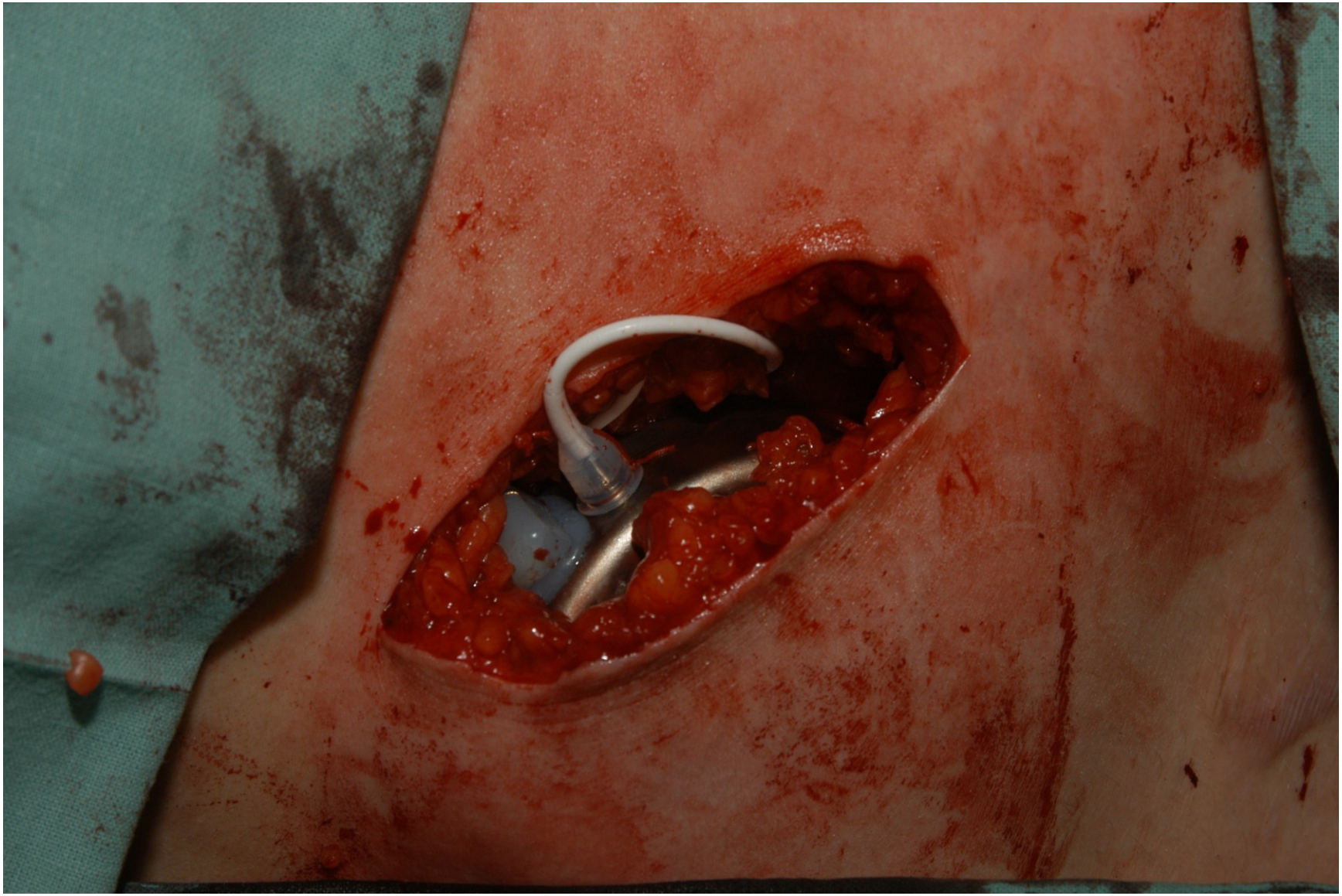
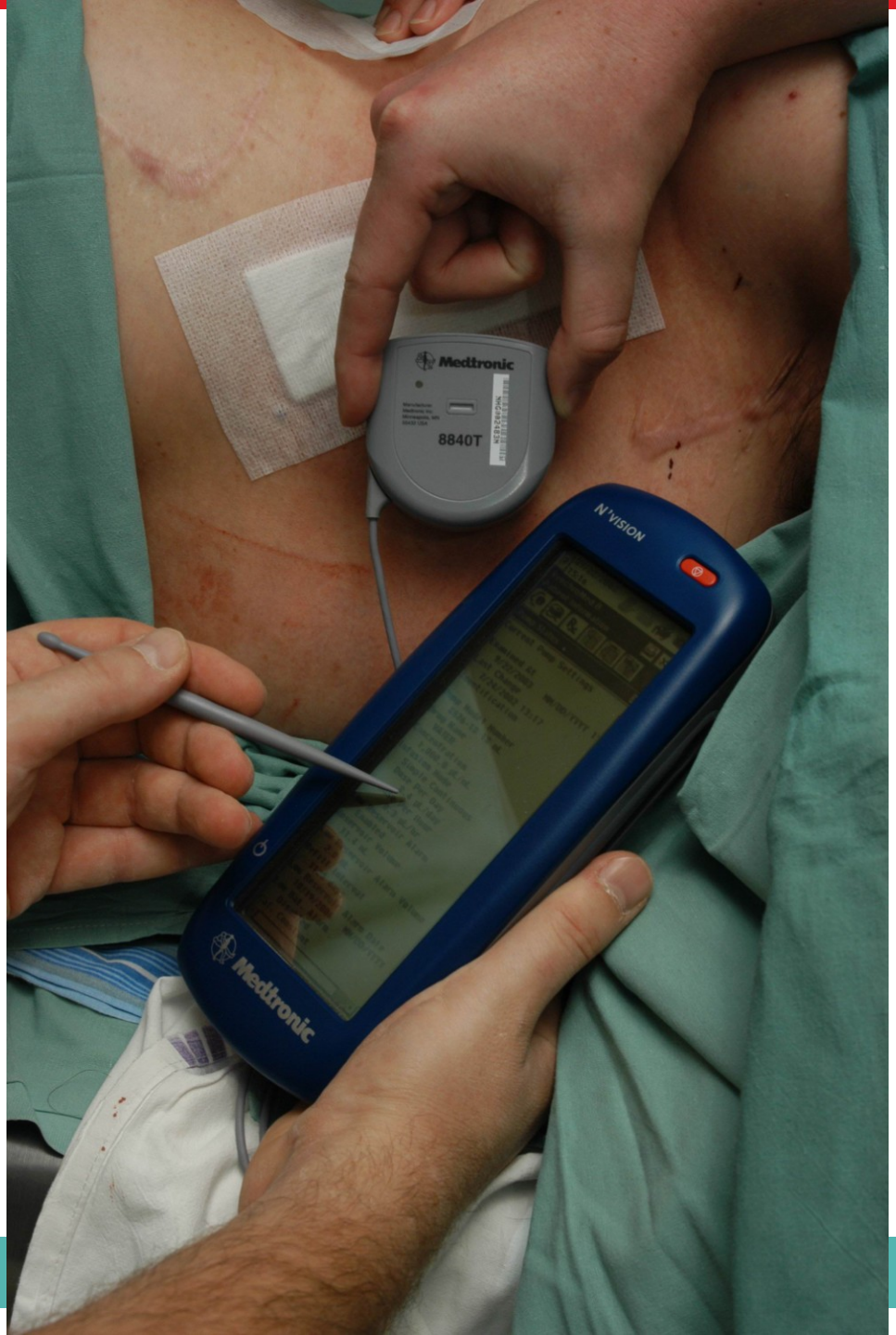
SN NGB0047918
MEDTRONIC, INC. USA




Medtronic
8840T
N'VISION
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Sympathetic blocks

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Sympathetic blocks

Reversible

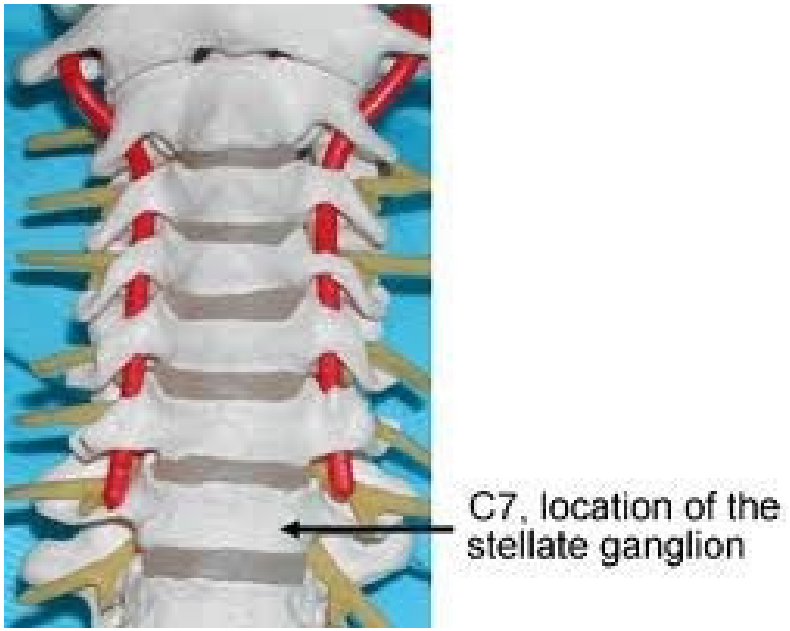
- Lokální anaesthetic

Ireversible

- Etanol 50–80%
- Fenol 6-8%

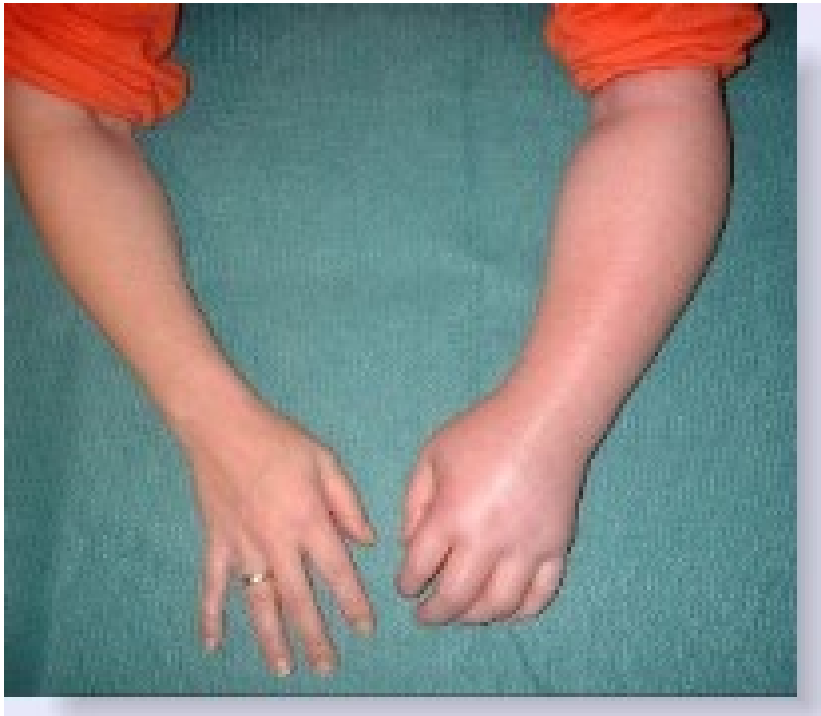
Ganglion stellatum – cervical sympathetic syst.

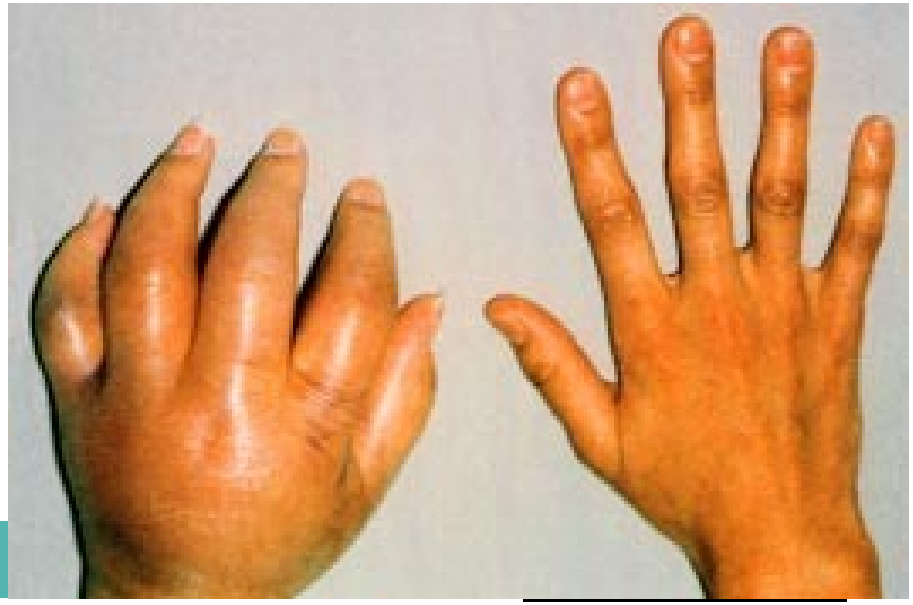
- Upper cervical ganglion (C2-C3)
- Middle cervical ganglion (C4-C6)
- Lower cervical ganglion, ggl. Stellatum (C7 -Th1)



Indication

- CRPS I. a II. Type (after surgery or injury, prolonged healing and oedema, followed with muscle atrophy and articulation freezing
- Post herpetic neuralgia
- Phantom pain
- Morbus Paget
- Post radiation neuritis
- Raynaud's disease





Therapy

- Series of 10 blocks, Marcaine 0,25% 10 - 15ml
- Possibility of blockades of other nerves in this region (n. glossopharyngeus, n. recurrent – gulping disorder, huskiness)
- Presence of Horner´s trias

Neurolysis of ggl. coeliacum

- Epigastrial pain
  - (painful attacks in case of chronic pancreatitis, cancer of pancreas – very painful type of cancer
- Blockade under CT control

Thank you for your attention