POSTOPERATIVE CARE

POSTOP BRACES

ACUTE POSTOP SPINAL PAIN

CHRONIC POSTOP SPINAL PAIN

FUTURE POSTOP SPINAL PAIN

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REHABILITATION PHASES

- **A** …..ICU – Surgical Clinic

  (days……. weeks)

- **B** …..Rehabilitation Clinic

  (weeks……months)

- **C** ……House – Outpatient Dpt.

  (months…….years)

MEDICAL SPECIALTIES - THERAPISTS

- Physical Medicine & Rehab
- Orthopaedics
- Neurosurgery
- Neurology
- Urology
- Gastroenterology
- Plastic Surgery
- Psychiatry
- Pathology
- Pulmonology
- ENT (Ear, Nose, and Throat)
- Ophthalmology

- Physiotherapists
- Occupational Therapists
- Speech Therapists
- Psychotherapists
- Social Workers
- Nutritionists
- Nurses
- Orthotists
- Paramedics
- Caretaker Companions

CS BRACES

MIAMI BRACE – Adjustable height cervical collar

- Traumatic injuries
- Spondyloarthropathy
- Herniated disc (HCD)
- Spinal stenosis
- Cervical headache syndrome
- RAof the neck

CS BRACES

MINERVA BRACE - Adjustable height cervico-thoracic brace

- Non-displaced rotational Atlantoaxial subluxation
- Type I odontoid process #
- Type I # of vertebrae C3 - C7
- Occipital condyle #
- C2 lateral masses #
- C2 # with traumatic spondylolisthesis (hanging mechanism)
- Bilateral # of anterior-posterior arch of the atlas
- Spinal fusion ± laminectomy ± discectomy

CS BRACES

HALO VEST – Invasive system for Cervical Support

- Unstable # of the Cervical & upper Thoracic Spine (C1-C7)
- Lateral Masses # of Atlas Type III - Jefferson, Hangman type III, type IV
- Odontoid Process type III - Vertebrae C1, C2, type III, type IV
- Explosive subaxial (C3 - C7) type III - Unstable minor compressive subaxial # (C3 - C7)
- Unstable 'Teardrop' subaxial cervical # (C3 - C7) Hangman-type # type II, type III
- Unstable atlantoaxial dislocation and hyperdislocation, Traumatic spondylolisthesis C2 - C3 type III
- Bilateral dislocations, Postoperative in bilateral #

CS BRACES

LERMAN HALO - Cervicothoracic brace for non-invasive cervical support

- Bilateral burst # of the anterior and posterior arches of the atlas
- Undisplaced # of the cervical spine odontoid process type II, lateral mass # type II
- Bilateral # of the anterior and posterior arches of the atlas
- Bilateral comminuted # of the posterior arch of the atlas
- Minor compression of the occipito-cervical spine A3–A7 type I
- Traumatic spondylolisthesis of the axis A2–A3 type II
- Postoperative therapeutic use

LS BRACES

GOLDWAIT type, low or high lumbar spine brace with compression cord

Indications:

- spondyloarthropathy of the L spine
- myoligamentous injuries of the L spine
- intervertebral disc herniation of the L spine
- postoperative care after spinal fusion
- stable fractures of the L spine
- spondylolisthesis of the L spine

LS BRACES

Chair – back spinal braces

metal adjustable stays and thermoplastic frame to enhance stability against lateral movements and rotations, with straps for adjusting lumbar compression

Indications:

- Vertebral # from L5 to T9
- Lumbar radiculopathies
- Spondylolisthesis with recurrent sciatica
- Severe lumbar deformity of various causes
- After intervertebral disc surgery
- Decompression of the spinal canal, stabilization of the lumbar vertebrae

LS BRACES

Taylor type brace

- ✓ Plastic shell reinforced with aluminum supports
- ✓ Shoulder straps pull the patient's body backward onto the brace.
- ✓ It must be adjusted by a specialist when worn for the first time, with the back molded with a bend to fit properly.
- ✓ The patient breathes normally and moves their arms and shoulders without restrictions.
- ✓ After treatment, the brace can be modified into a lumbar belt.

Indications:
- Osteoporotic # of the T – L spine
- Trauma to the T – L spine
- Spondyloarthropathy

LS BRACES

3-point trunk brace

- ✓ made of special aluminium with leather contact parts and movable pads that reduce pressure on the sternum and ribs
- ✓ adjustable in height and in the sternal width
- ✓ the pelvic bar is a movable system that provides comfort in sitting positions

Indications:

- stable compressive # of the L spine (LSS) and lower T spine (LTS)
- postoperative use for primary or secondary L spine lesions
- for decompression of the spinal column.

POSTOP SPINAL PAIN

POSTOP PAIN with neurological deficit

- Hardware failure
- Injury spinal cord/nerve root
- Neuroapraxia
- Anesthesia complications
- Wrong procedure/Wrong level

Reexamine - Reimage

abnormal → revision surgery

normal → reasume pain care

POSTOP PAIN without neurol. Deficit

Inpatient pain management

nonresponder → Reexamine - Reimage

responder → Discharge from hospital

- **Acute** postop pain (up to 4-6wk postop)
- **Subacute** postop pain (6wk to 12mo postop)
- **Chronic** postop pain (>12mo postop)

ACUTE POSTOP SPINAL PAIN

Rule out any reason related to surgery (bleeding, infection, dural tear, nerve or spinal cord injury, e.t.c.)

ERAS protocols (**E**nhanced **R**ecovery **A**fter **S**urgery)

1. Preop phase…..preparatory counseling
   …..stop alcohol & tobacco
   …..optimizing organ function
   …..optimizing nutrition – liquids (albumin > 3,5g/dL)
   …..multimodal analgesia

2. Intraop phase……MIS techniques
   ……balanced fluids, normothermia
   ……appropriate regional anesthesia

3. Postop phase……early mobilization & early return to oral nutrition
   ……multimodal analgesia

ERAS team: Surgeons, anesthesiologists, nurses, physiotherapists

ERAS must be tailored to specific spine procedures and not universal approach

ACUTE POSTOP SPINAL PAIN

MULTIMODAL ANALGESIA

OPIOIDS
Smallest dose
Smallest duration

PHARMACOLOGICAL TREATMENTS

- Opioids
- NSAIDs
- Acetaminophen….IV vs. oral
- Gabapentinoids (gabapentin, pregabalin)
- Muscle relaxants
- Local anesthetic infusion
- PCA pumps IV or SC
- Epidural analgesia
- Regional blocks

Complications – Containdications

- Dependency, tolerance, ↓ respiration
- Mucosal damage GI problems, bleeding, ↓ osteogenesis
- Kidney toxicity in high doses >3-4g/d
- VAS ↓ ….900mg/d>1200>600>300>pregabalin 300-150-75
- Constipation, nausea, sedation
- Muscle twitching, numbness, dizziness
- Nausea, vomiting, constipation
- ↓ BP, severe headache, itching, inadequate < PCA pumps

ACUTE POSTOP SPINAL PAIN

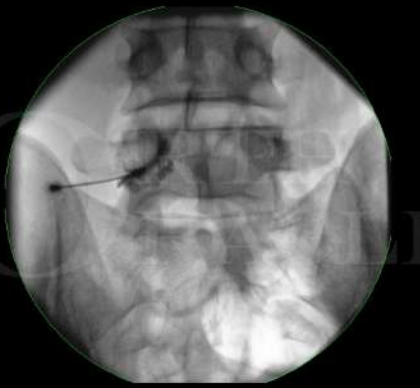
MULTIMODAL ANALGESIA

Regional blocks

- Becomes more prominent method
- Preferable for pts with heart & respiratory problems
- Well tolerated
- **Erector Spinae Plane Block (ESPB):** Involves injecting local anesthetic into the plane between the erector spinae muscles and the transverse processes of the vertebrae. widely studied technique for lumbar spinal surgery.
- **Retrolaminar Block (RLB):** Involves injecting local anesthetic to block the spinal nerves between the lamina and the superior costotransversospinalis muscle.
- **Thoracolumbar Interfascial Plane (TLIP) Block**: Another fascial plane block used for multimodal analgesia in lumbar spine surgery.
- **Dorsal Ramus Block (DRB):** A block targeting the dorsal rami of the spinal nerves.
- Be aware of **LAST** **L**ocal **A**nesthetic **S**ystemic **T**oxicity : if the local anesthetic is accidentally injected directly into a blood vessel or if an excessive volume is used, as the erector spinae fascial plane is highly vascularized. Symptoms can range from CNS effects (e.g., seizures) to CV collapse.

US guidance

Needle into fascial plane between the erector spinae muscles and the top of the transverse process of the vertebra.

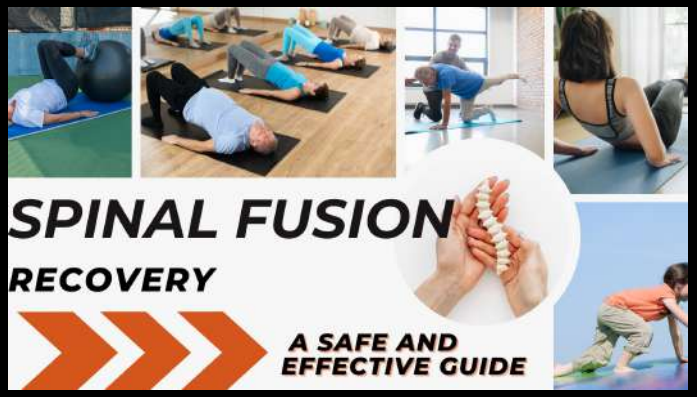


ACUTE POSTOP SPINAL PAIN

MULTIMODAL ANALGESIA

POSTOPERATIVE REHABILITATION

- Early initiation of physiotherapy 4-6 wks postop
- ↓ pain intensity, ↓ disability
- Prior to physio surgeon must reevaluate pt for surgery complications
- Exercises that pt is able to tolerate
  - trunk & lower limbs
  - strengthening & stretching
- Modalities may include but not limited to TENS, aquatic therapy, manual therapy, massage, therapeutic US
- 12weeks duration postop



CHRONIC POSTOP SPINAL PAIN

= pain persisting at least 3 months after surgery (6-12mo according to others), that was not present before surgery, or had different characteristics or increased intensity from preoperative pain *Kongsgaard 2014*

MULTIMODAL ANALGESIA

	NNT - Number Need to Treat
SSRIs…..fluoxetine Prozac, paroxetine Seroxat, sertraline Zoloft, escitalopram Cipralex, duloxetine Cymbalta	6,4
Gabapentinoids…..pregabalin Lyrica	7,7
….gabapentin Cymbalta	7,2
Capsaicin high concentration patches	10,6
Tricyclic antidepressants…..Clomipramine Anafranil,	<5
Imipramine Tofranil, Amitriptiline Minitran	<5
Opioids strong	<5
Tramadol	<5
Botulinum toxin	undetermined
Lidocaine patches	

CHRONIC POSTOP SPINAL PAIN

MULTIMODAL ANALGESIA

INTERVENTIONAL PAIN TREATMENTS

- Epidural injections following spine surgery
- Neuromodulation:

a. Spinal cord stimulation SCS
b. Dorsal root ganglion stimulation
c. Peripheral nerve stimulation of the medial branches

- Intrathecal IT pain pumps

Studies

53% of pts without steroids 59% with achieved >50% pain relief

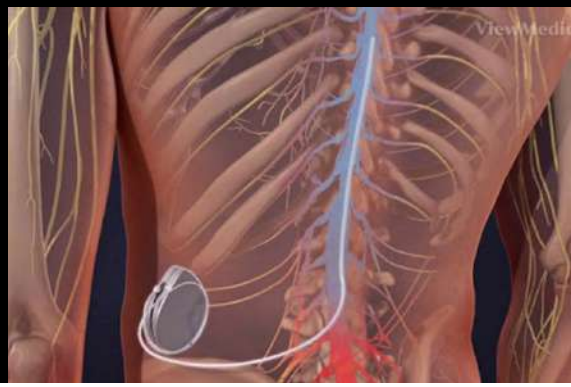
50%-70% achieved at least 50% pain relief

63% to 80% achieving at least 50% relief at 12mo

73% of pts achieved at least 30% relief

86%-94% of pts reported good to excellent pain relief

and the winner is



FUTURE POSTOP SPINAL PAIN

MULTIMODAL ANALGESIA

Precision pain management = tailoring an individualized treatment plan for a patient specific phenotype *Edwards et al*

Measuring pt phenotype:

1.Biomarkers

2. Brain imaging

3. Peripheral nerve assessment

4. Psychosocial factors

5. Sleep

6. Quantitative sensory testing

7. Endogenous pain prodaction

8. Patient reported pain characteristics

LACTARIUS DELICIOSUS, COMMONLY KNOWN AS THE **DELICIOUS MILK CAP**,OR **SAFFRON MILK CAP**, OR **RED PINE MUSHROOM**, IS ONE OF THE BEST-KNOWN MEMBERS OF THE LARGE MILK-CAP GENUS ***LACTARIUS*** IN THE ORDER **RUSSULALES**

- it is collected near wild pine trees
- it is typically harvested in October, November
- carrot-orange cap that is convex to vase shaped, inrolled when young, 3 to 20 centimetres often with darker orange lines in the form of concentric circles
- The flesh and gills stain a deep green color when handled
- When fresh, it exudes an orange-red latex that does not change color
- grows under Mediterranean wild pines, as well as throughout the Mediterranean Portugal, Bulgaria, Spain, Greece, Italy, Cyprus, France , Turkey and elsewhere
- Edible


Thank
You
Merci
Obrigado
Asante
Spasibo
Maake
Kiitos
Welalin
Juspaxar
Vinaka
Arigato
Matondo
Grazie
Dank Je
Mochchakkeram
Nirringrazzjak
Ua Tsaug Rau Koj
Cam on ban
Terma Kasih
Multumesc
Kia Ora
Chokrane
Dankon
Mamana
Salamat
Matur Nuwun
Raibh Maith Agat