NON-OPERATIVE SOLUTIONS FOR CHRONIC BACK PAIN

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Objectives

- Common Causes of Chronic Back Pain
- Role of Epidural Steroid Injections in neuropathic pain.
- Role of Lumbar Facet Rhizotomy in somatic pain.
- Role of Neuromodulation (SCS) in treating Advanced Neuropathic Pain.
Acute Low Back Pain

- Affects 60-85% of the adult population
- Most common reason for missed work & doctor’s visit
- Majority resolves in 8-10 weeks without treatment

**Examples:**
- Sprain & Strain
- Degenerative Arthritis Flare Up
- Mechanical Irritation of a Nerve Root
- Discogenic Tear
- Bony Fracture or Contusion
90% of acute back pain and “Disc Herniations” will resolve in 2-3 mo regardless of treatment.

**SURGERY INDICATIONS:**
- Progressive Neurologic Weakness
- Neurologic Injury to Bowel/Bladder
- Surgically correctable pain unamenable to all conservative therapies
- Surgical Instability or Nerve Compression
Acute LBP: Recovery and Prevention

- Short rest period (3-5 days), work limitations
- Medications
  - Physical Therapy
- Chiropractic Manipulation
- Acupuncture
- TENS, Traction
- Sleep & Diet are very important.

Physician’s Role: Education, Diagnosis, Supervision
“Glorified Cheerleader”
Chronic Low Back Pain

- Persistent Strain- Posture, Weight, and Body Mechanics
- Lumbar Spondylosis
- Lumbar Stenosis
- Lumbar Disc Herniation
- Discogenic Pain
Overuse Syndrome
Muscular Strain
Ligamentous Inflammation

MY BACK GOES OUT
WEEKEND WARRIOR STRAIN
Disc Degeneration
ligament thickening
Facet hypertrophy
  -Narrowing of Canal

Eventually leading to a compromise of the nerve roots existing the canal and their vascular supply
Lumbar Stenosis: Spinal Canal Narrowing
Stenosis–Age against Gravity

- Claudication with standing and walking
- Ambulatory Intolerance
- Back Fatigue
- Buttock, Calves, and Leg numbness with standing
Mechanical Disc Impingement

- Burning, Tingling, Numbness in the legs
- Usually with static position vs movement
- Radiates in a dermatomal pattern
- Sensory, Motor, and reflex changes
Disc Herniation MRI Imaging
Result: Radiculitis “Sciatica”
Discogenic Nerve Compression causes pain from:

- Physical Compression of nerve root
- Chemical Irritation of nerve root

Weakness, Numbness, Muscle Atrophy are signs of nerve damage
Treatment Goals of Disc Herniation

1. Accelerate recovery beyond what natural history can accomplish by itself

2. Improve the quality of life during and after the recovery process.

3. This is done by-
   - Controlling the acute inflammation.
   - Active Strengthening and Stretching.
Initial Conservative Measures

- Relative Rest
- Physical Therapy
- Sleep
- Medications
- Exercise and Movement Restrictions
- Back Brace for Stability

- Reassurance  i.e. Wait it Out!!
Commonly used to relieve back pain when a mechanical spine nerve irritation is the cause.

Used for exacerbations of radicular and non-radicular pain from nerve inflammation.

When combined with PT & NSAIDS, ESI can often delay or prevent surgical treatments.
How do Epidural Steroid Injections work?

- In essence, it is a powerful anti-inflammatory that reduces nerve inflammation at the disc nerve interface “The source”.

- Epidurals wash the nerve root in a mixture of steroid and local anesthetic to reduce swelling.

- Epidurals may hasten the recovery time by reducing nerve irritation and edema around the disc herniation.

- Epidurals do not resolve disc herniations
X-Ray guidance & Contrast used for Safety and Accuracy
Intralaminar ESI

- Most common technique for large spread.
- Used for stenosis, low back pain
- Less specific
- Risk of dural puncture.
X-ray PA view of an IESI
More X-ray Lateral Views
WHY DO A TFESI?

- Placed at a specific level
- Steroid placed at disc nerve interface
- Used for selective acute radicular pain
- Risk of transient neuritis
X-Ray Pictures of a Epidural Needle Placement
FORAMINAL EPIDURAL STEROID INJECTION AND SELECT NERVE BLOCK LEFT L4, L5, S1

NEEDLE

L4 NERVE

NEEDLE

L5 NERVE

NEEDLE

S1 NERVE

LEFT

RIGHT
Is this the same as an epidural for labor pain?

Is this a permanent cure?

Can I only have three in a lifetime?

Do I need three injections in a row?
More Misnomers

- Is this the same as a nerve block, or cortisone injection?
- How important is the specific level of steroid administration?
- Does one need Anesthesia (To be put out!!) to have an ESI?
- Does one need Fluoroscopy to have an ESI?
- How Risky is this procedure?
**Injections should be done with Caution**

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<td>Proximal Myopathy</td>
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1. Connect the posterior elements of the spine.

2. Prone to Degenerative changes
Posterior and Lateral Views of the Facet Joint
Facet Joint Pain

- The facet joint carries up to 1/3 of the loading force of the lumbar spine

- Osteoarthritis of the joints leads to cartilage fissures, fraying, and erosions.

- Heterotopic Growth (bony spurs) leads to instability and inflammation.

**Summary:** Degeneration of the facet joints account for approximately 10–15% of the cases with chronic low back pain
Facet Joint Pain

Symptoms

- Aching, constant
- Dull, or Sharp
- Worse with movement
- Localized but can refer to the hip/buttock

Anatomy

[Image of anatomical diagram]
LUMBAR FACET BLOCK

CERVICAL FACET BLOCK

Medication injected into joint

Cervical facet joint injection
Cervical Facet Block under X-ray

Silbergleit R et al. Radiographics 2001;21:927-939
The facet joints are “innervated” by sensory nerves that come off the posterior aspect of the corresponding spinal nerve.

These small sensory nerves “dorsal ramus medial branches” form a lattice work of sensation to the facet joints.

Key Point: Local anesthetic block of the MBB can temporarily interrupt the pain signal carried to a specific facet joint.
Medial Branch Location

Facet joint

Medial branch nerve

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Radiofrequency Ablation (RFA)

- A.K.A. Facet Rhizotomy, Medial Branch Neurectomy, “That burning procedure”

- RFA utilizes a radiofrequency probe to electrochemically denervate the medial branches, thus rendering the facet joints pain free.

- The medial branches do in fact re-innervate over time to a mild degree, whereby the RFA can be done again.
First, the medial branch is localized using sensory/motor stimulation & imaging

Next, the targeted area is locally anesthetized for comfort

Finally, the RFA device generates a radial sphere of “electrical frequency” at 80 degrees for 90 seconds at the tip of the probe over each MBB.
RFA Advantages

- It’s a semi-permanent procedure for facet joint related low back pain.
- No steroid is necessary for the procedure.
- It is useful for axial low back and neck pain from degenerative spine conditions even after surgery.
- Little risk to the patient if it is done properly.
- It is not useful for neuropathic “radicular pain”.


Radiofrequency Ablation

80 degrees, 90 sec. lesion
Multiple lesions to de-innervated each facet joint.
Advanced Pain Therapy: SCS
Dorsal Column Stimulator (SCS)

- Third tier advanced pain therapy for chronic severe Neuropathic pain that has exhausted all other modalities and treatments.

- The SCS creates an electrical field around the posterior spinal column and modulates the pain signal perceived by the CNS.

- The nerve pain is converted to a soothing, tingling buzzing sensation.
SCS is used for neuropathic pain

- Failed Laminectomy Syndrome
- Spinal Stenosis without operative options
- Chronic Radiculopathy
- Reflex Sympathetic Dystrophy
- Generalized Peripheral Neuropathy
SCS is an electrical modulation of the spinal cord signal perceived by the CNS by stimulating the dorsal column fibers.

The SCS lead is placed via the epidural space and configured to provide adequate coverage.

A trial is done first in order to test the outcome prior to permanent implantation. (A Test Run)
What to expect from the Trial

- A screener will be attached to the electrode leads in the epidural space.

- An electrical impulse will be delivered and configured to cover one’s normal pain with a soothing tingling sensation.

- You will be awake during the trial lead configuration to ensure adequate pain coverage.

- You will leave the trial with an external battery pack and remote control to continue to monitor pain coverage for 3-5 days.
Lead Placement and Home Monitoring
Successful Trial: 50% reduction in pain, improved function, and less opiate use.

Cognitive ability and motivation to use the device

Realistic expectations of benefits and limitations

Psychological Clearance to rectify any underlying psychiatric impediments (i.e. depression, anxiety)
Surgical vs Percutaneous Lead Placements

- Electrodes inside lead
- Lead wire
- Extension wire
- Pulse generator

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THE END