Management Decisions in Back Pain

How to navigate a complex problem

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Southern Tier Neuroscience Symposium

Corning Country Club

October 21, 2011

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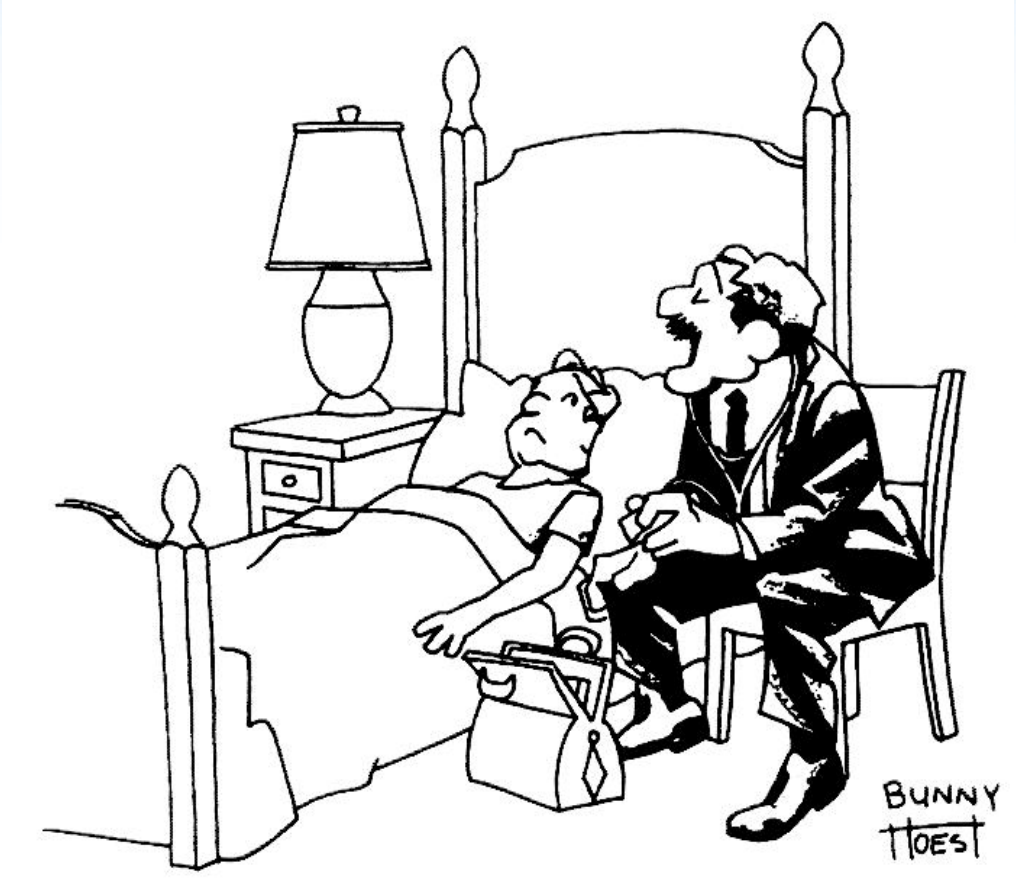
Chronic Back Pain: An American Epidemic



"You called me just in time. Another day or two, and you would have been up and around."

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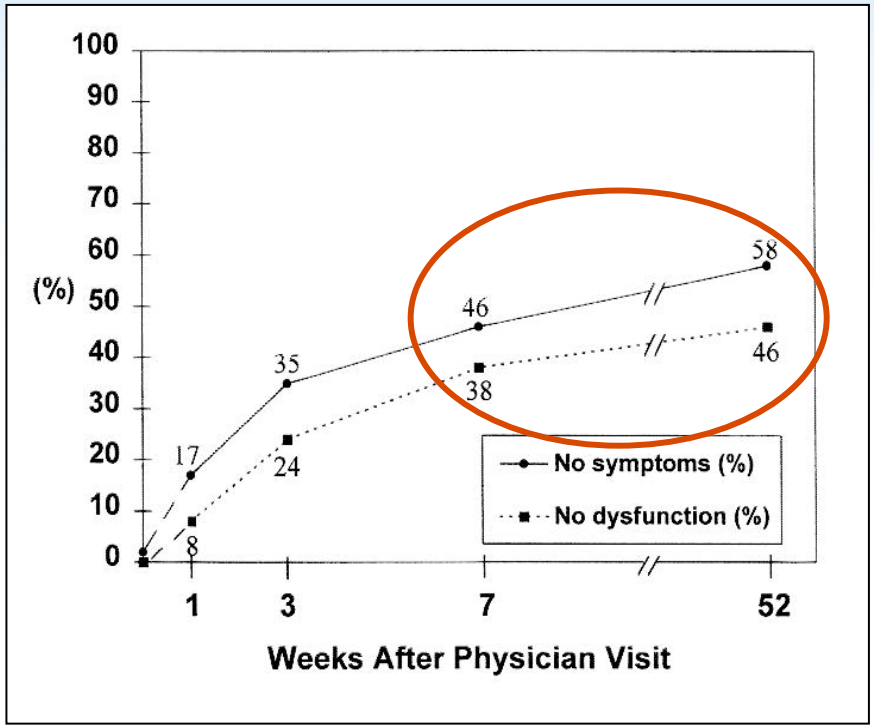
Pts presenting to PCP with c/o acute LBP (52 wk fu)

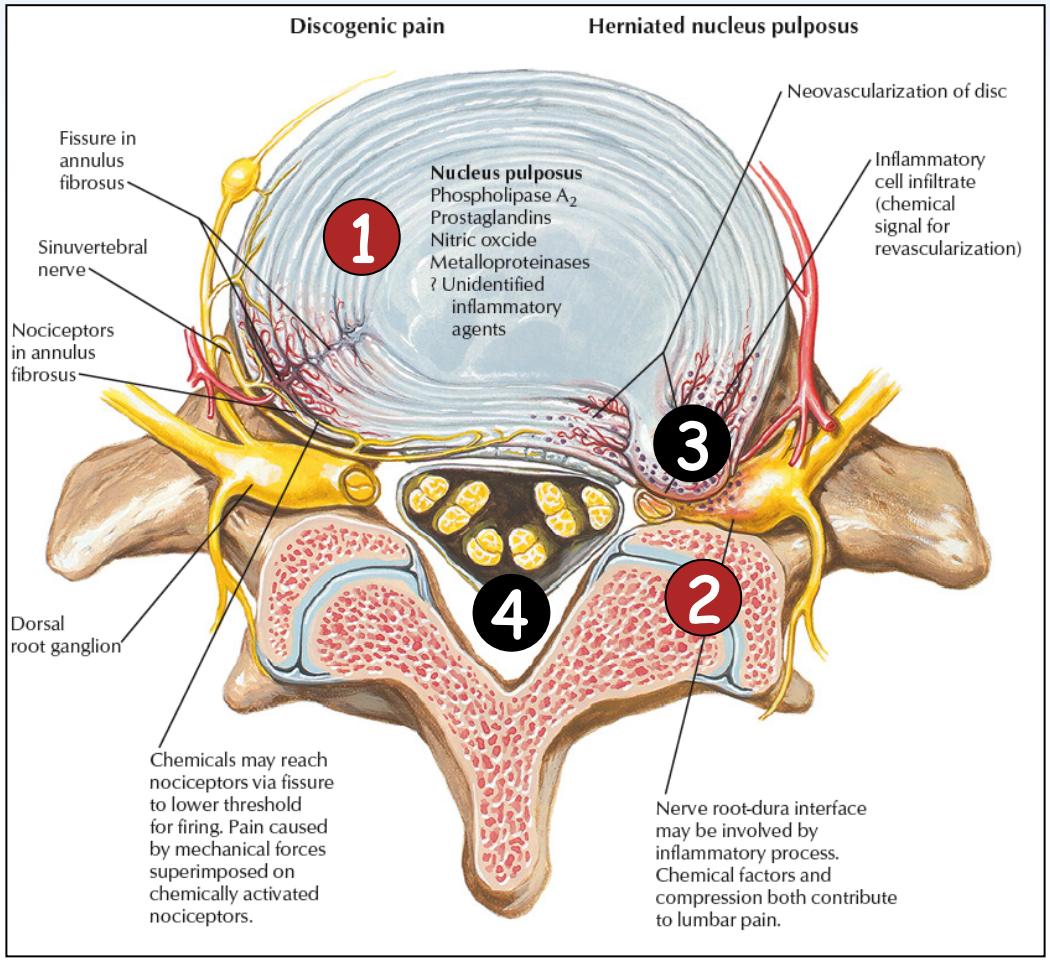


42% of pts w/ residual sxs and 54%

w/ residual dysfunction at one year

Cherkin ***Spine*** 1996 21:2900-2907

Mechanical LBP vs. Neurogenic Pain



1. Lumbar Disc
2. Facet Joint
3. Nerve Root
4. Thecal Sac

Utilization/Cost of Non – Surgical Services

Spine Pt Outcomes Research Trial (SPORT) Observational Cohort

Table 2. Nonoperative Treatments

	No. (%) (n = 323)*
Clinicians/services	
Education/counseling	299 (93)
Emergency department	52 (16)
Surgeon	119 (37)
Chiropractor	36 (11)
Internist/neurologist/other physician	195 (60)
Physical therapist	142 (44)
Acupuncturist	13 (4)
Injections	180 (56)
Other	102 (32)
Medications	
NSAIDs	193 (60)
COX-2 inhibitors	101 (31)
Oral steroids	15 (5)
Narcotics	147 (46)
Muscle relaxants	66 (20)
Other	172 (53)
Devices	
Brace	18 (6)
Corset	9 (3)
Magnets	12 (4)
Orthopedic pillow	38 (12)
Shoe inserts	25 (8)
TENS device	12 (4)
Other medical devices	27 (8)
None	216 (68)

Abbreviations: COX-2, cyclooxygenase 2; NSAIDS, nonsteroidal anti-inflammatory drugs; TENS, transcutaneous electrical nerve stimulation.

*Patients who had used clinicians, treatments, medications, and devices within 1 year following enrollment or until the time of surgery; 323 patients either had no surgery in the first year of enrollment or had at least 1 regularly scheduled follow-up visit prior to surgery at which nonoperative treatment information could be assessed.

Utilization/Cost of Surgical Treatments

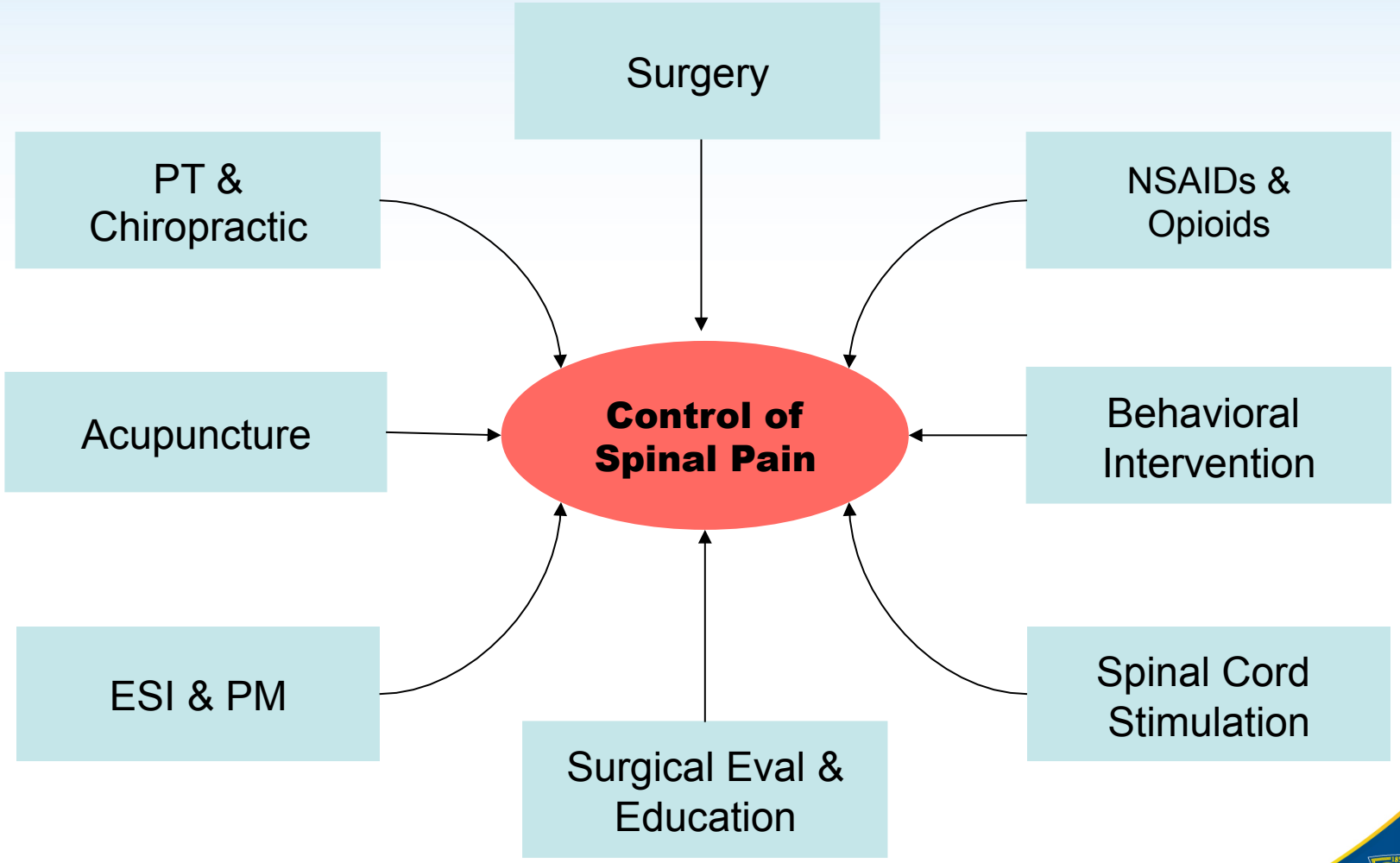
2005 National Hospital Bill:

Medicare	$411B
Medicaid	$124B
Private	$124B

Growth in surgeries ('97 - '02)

- THR (13%)
- TKA (14%)
- Spine Fusion (77%)

How do we Provide a Continuum of Care?



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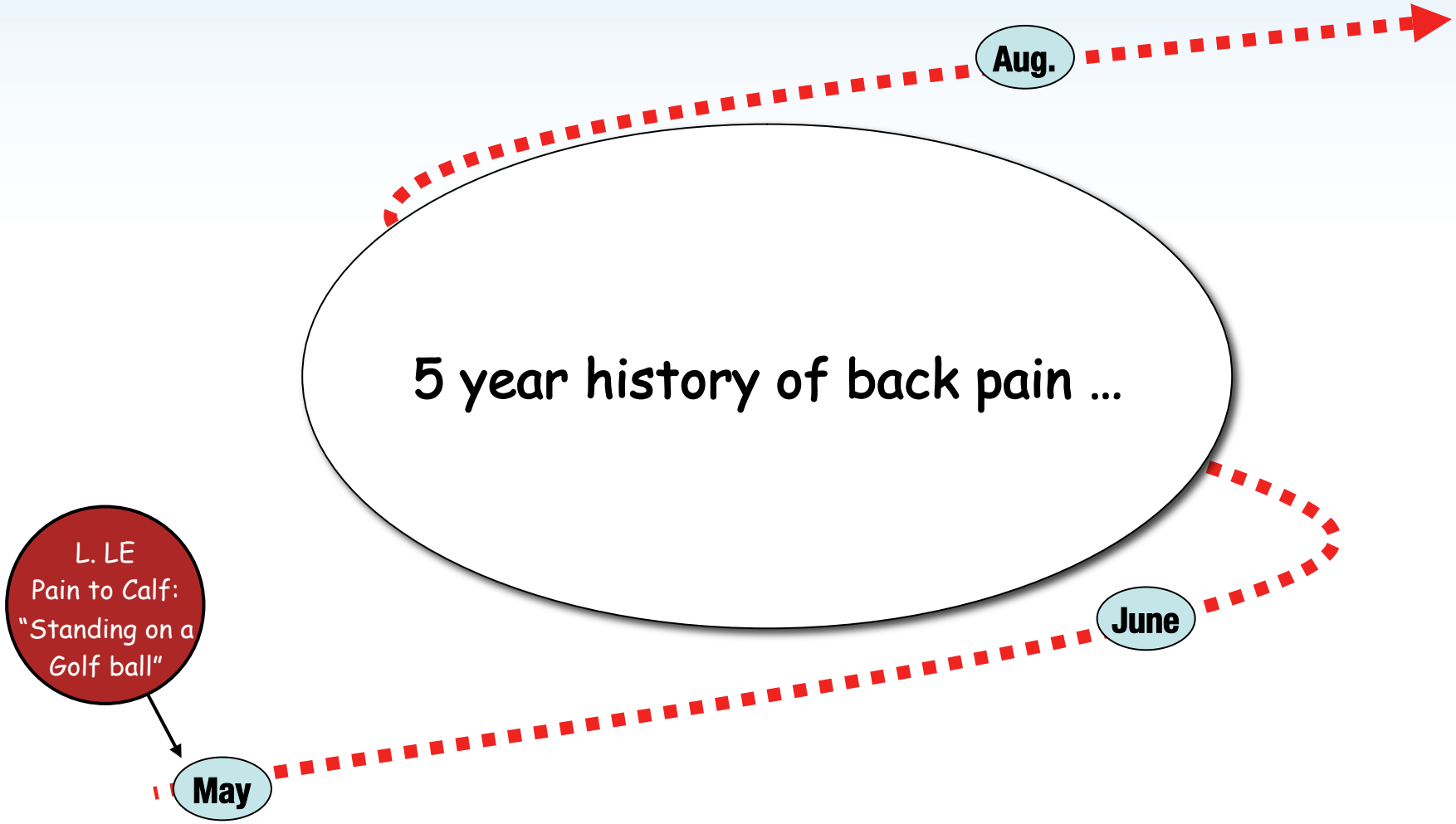
Lumbar Spine Disease: 37 y.o. female (LJ)



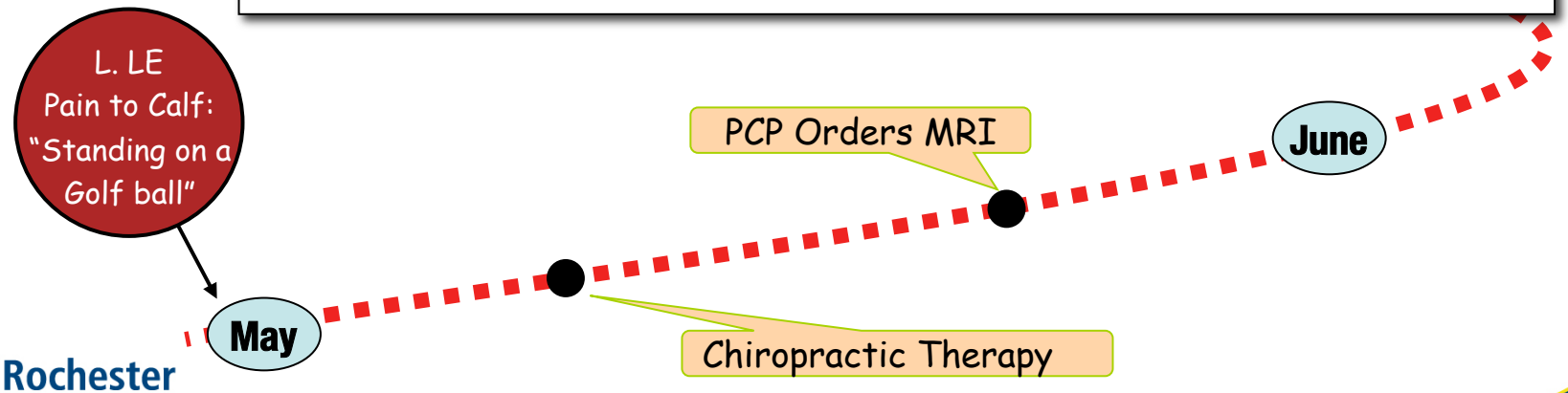
Lumbar Spine Disease: 37 y.o. female (LJ)

"There is loss of signal at the L5 - S1 disc c/w disc dessication. The remainder of the lumbar and lower thoracic discs demonstrate normal characteristics."

"There is moderate facet joint hypertrophy bilaterally at L5 - S1"

"At L5 - S1 there is evidence of degenerative disc disease w/ vertebral body osteophytes/disc bulge complexes. In addition there is a large disc extrusion posteriorly and eccentric to the left which compresses the thecal sac."

"The right neural foramen is patent. There is bilateral facet hypertrophy at L4 - L5."



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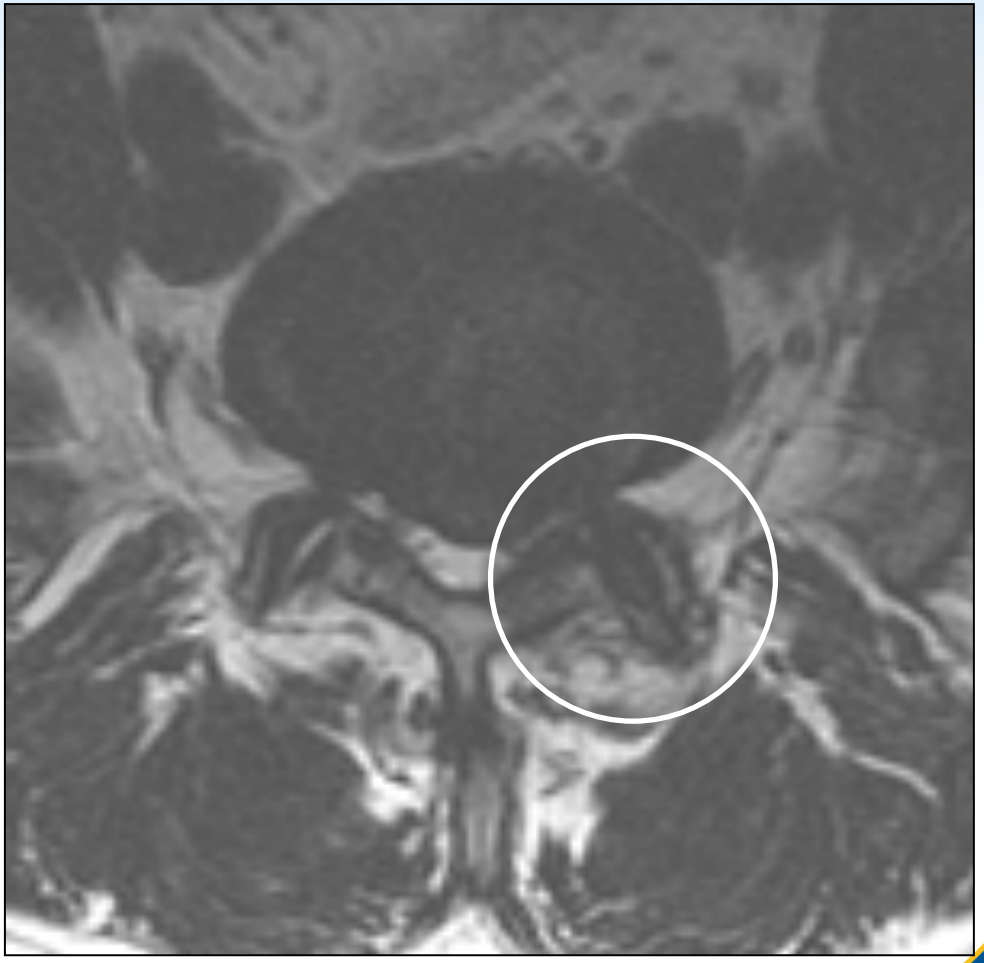
37 y.o. female: 5 yr. hx of mechanical LBP

Disc Dessication



Facet Hypertrophy

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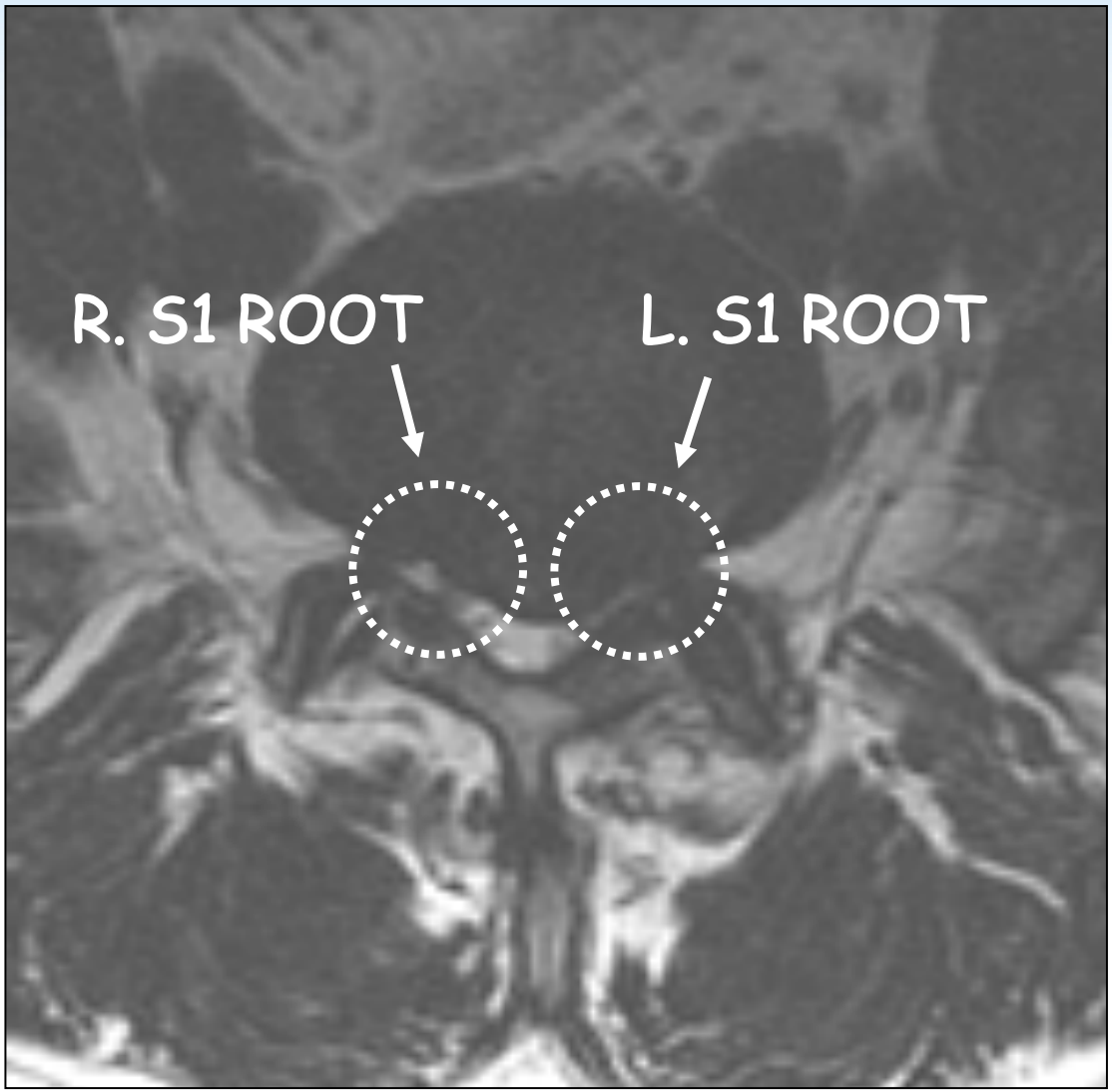
37 y.o. female: more recent onset neurogenic pain



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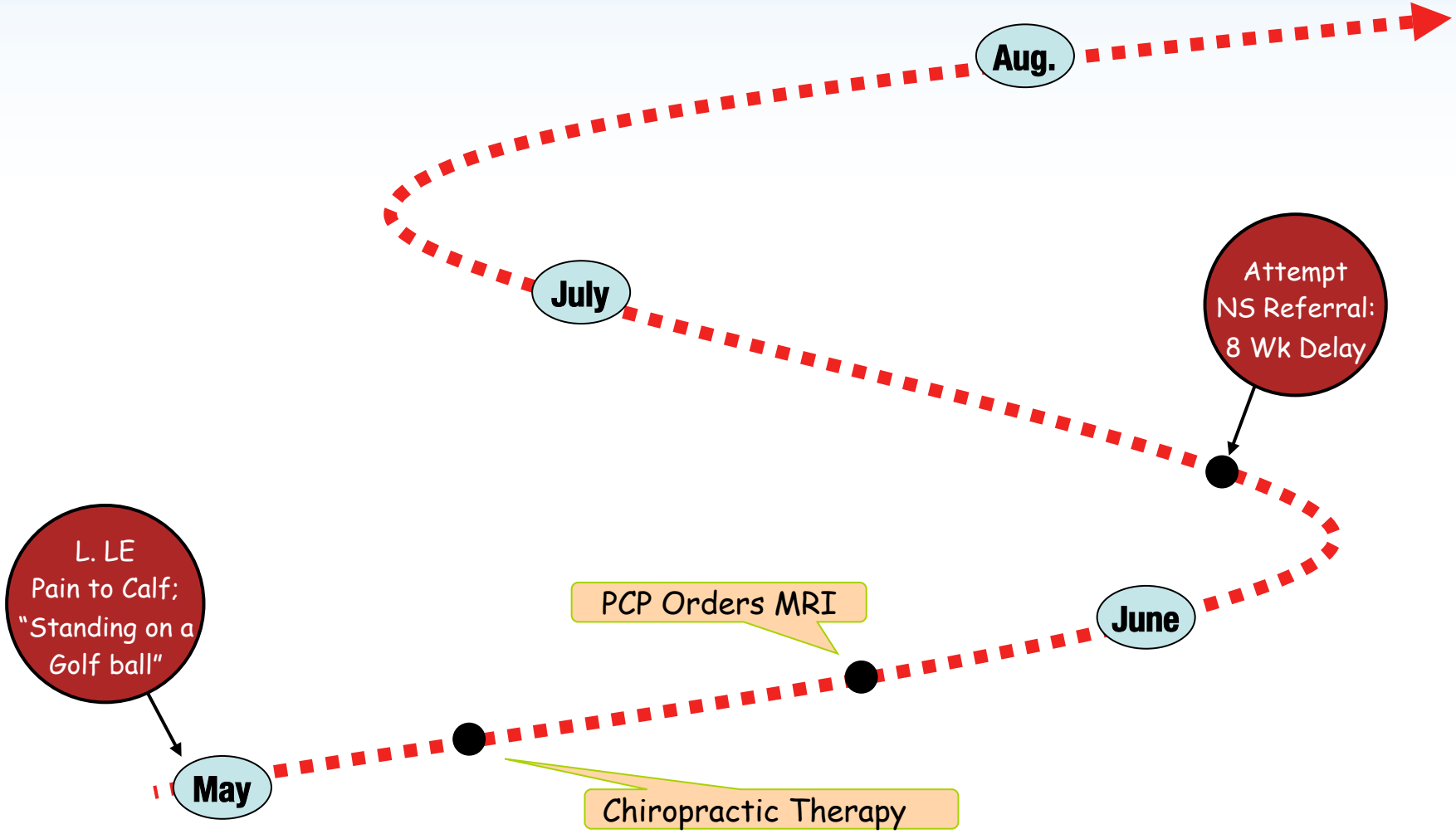

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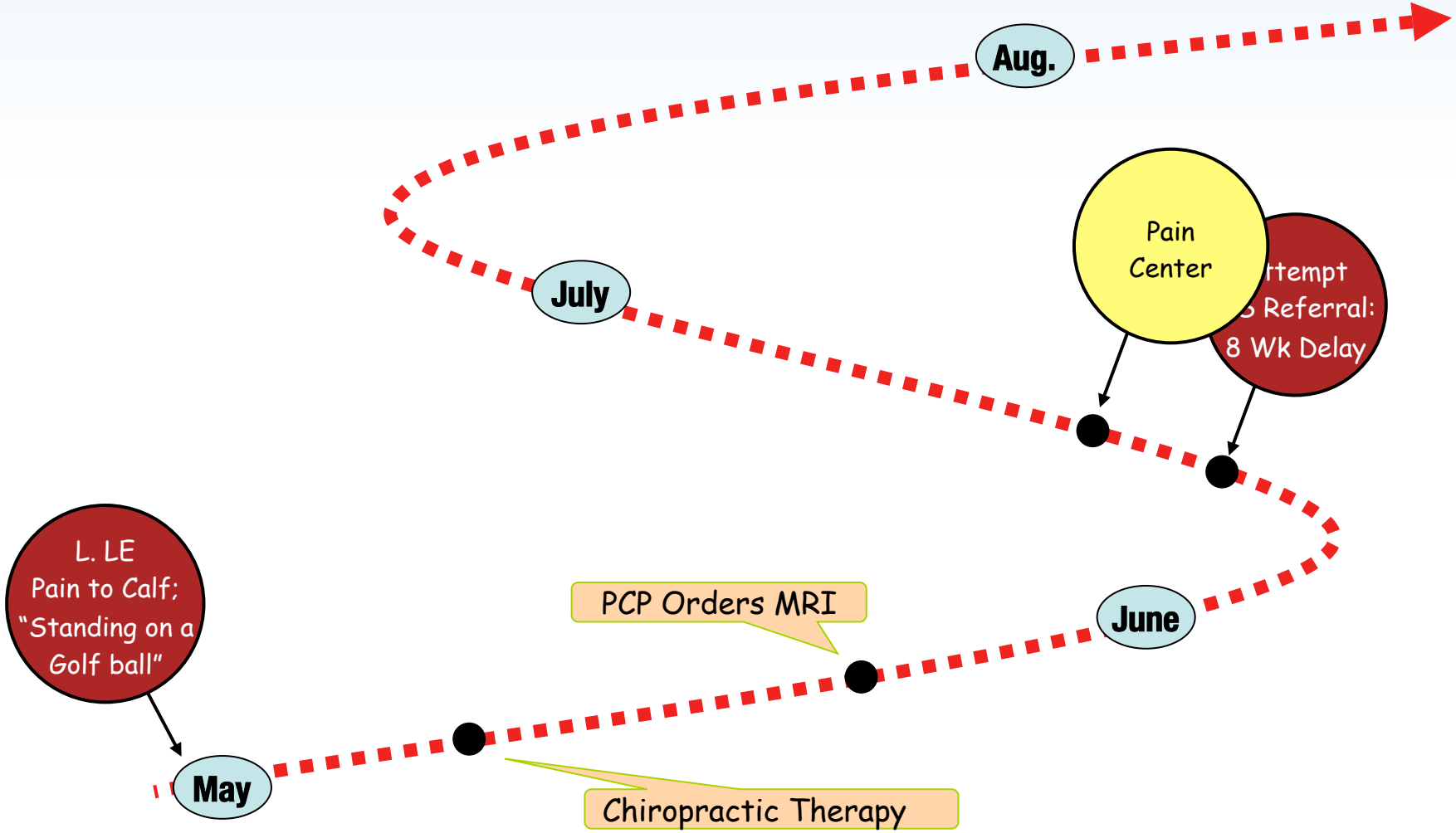

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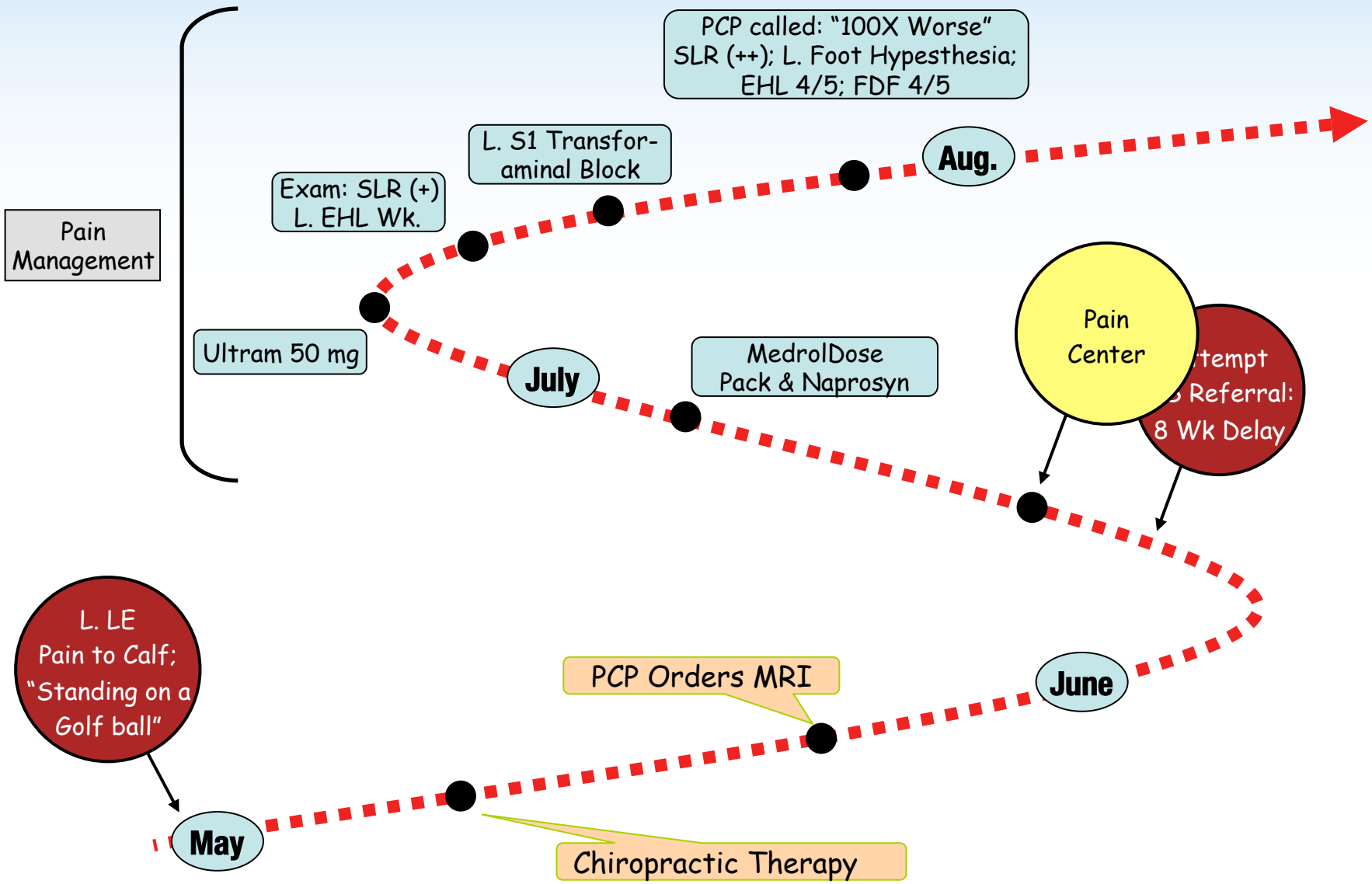

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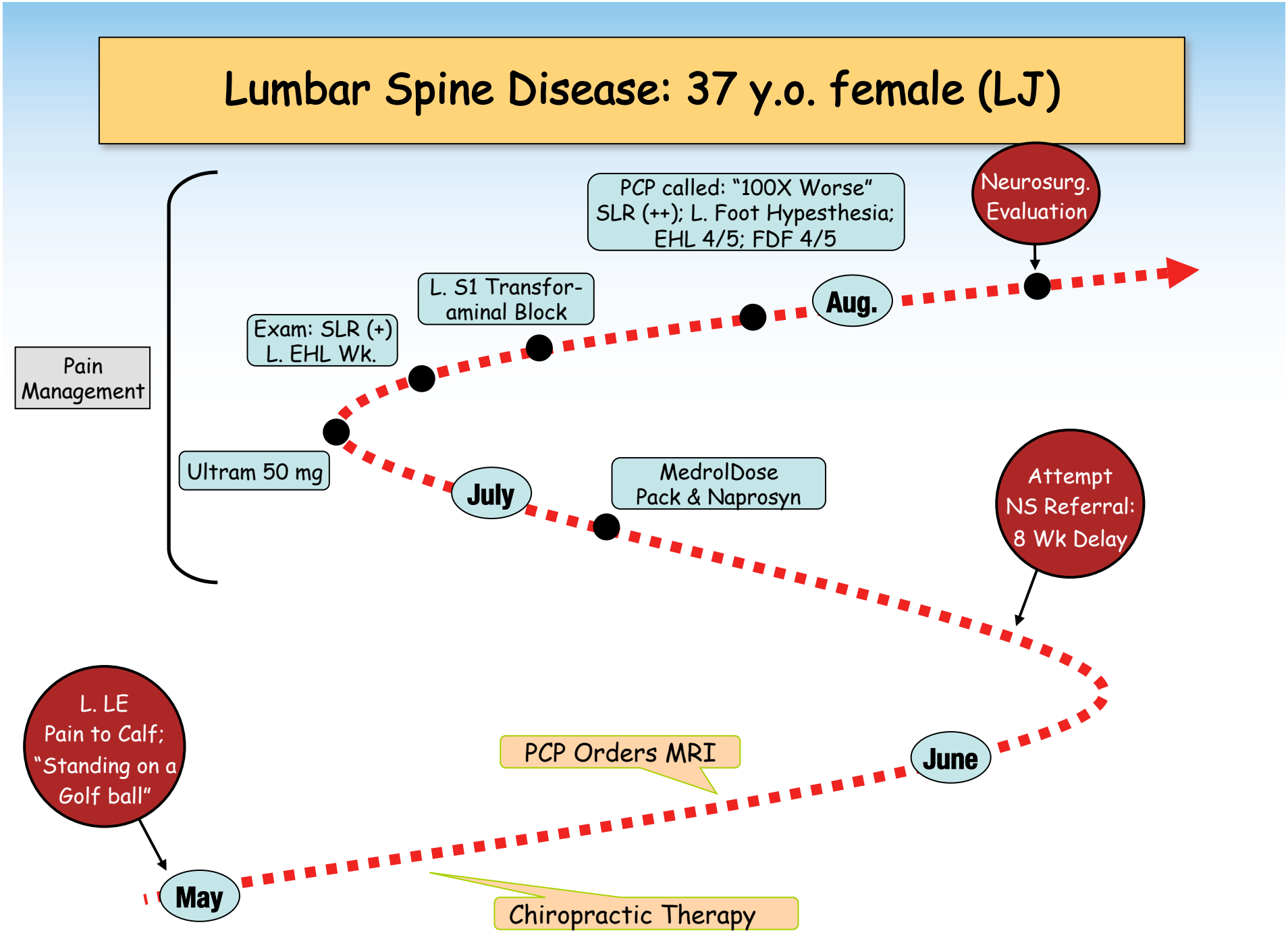


Lumbar Spine Disease: 37 y.o. female (LJ)

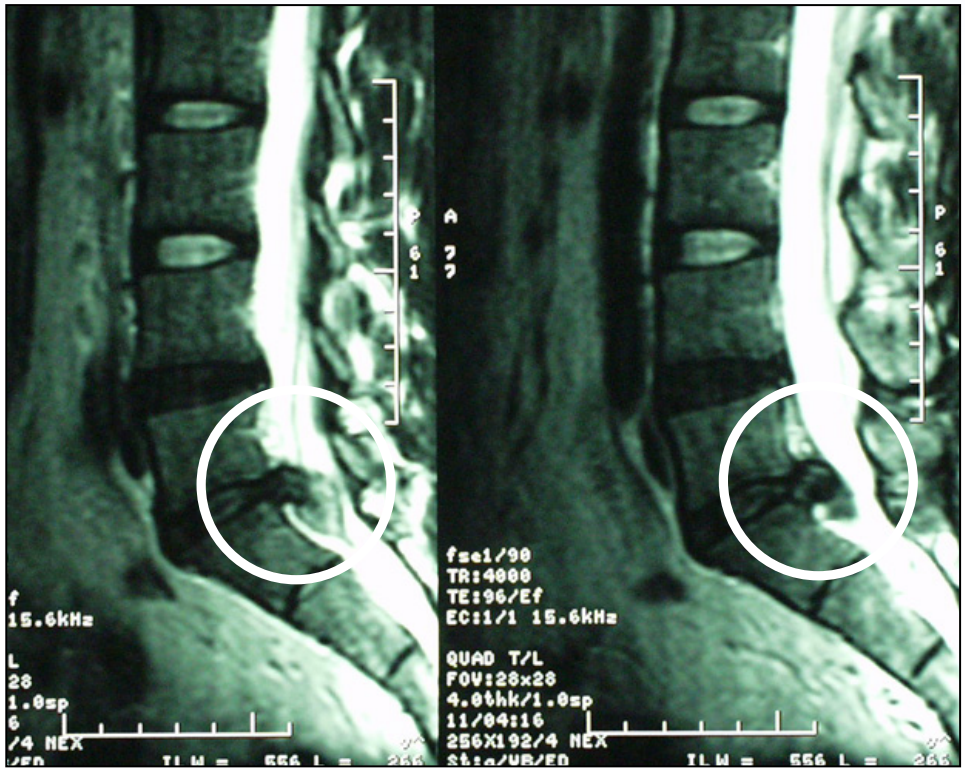
Surgery August 18th

Post Operative Course

- Cleared to return to part time teaching on Sept 3rd
- 2 months lifting/bending restriction
- No Physical Therapy necessary
- Regular exercise/swimming recommended

Large Disc Herniation & No Surgery

E.X. 32 yo Corning executive



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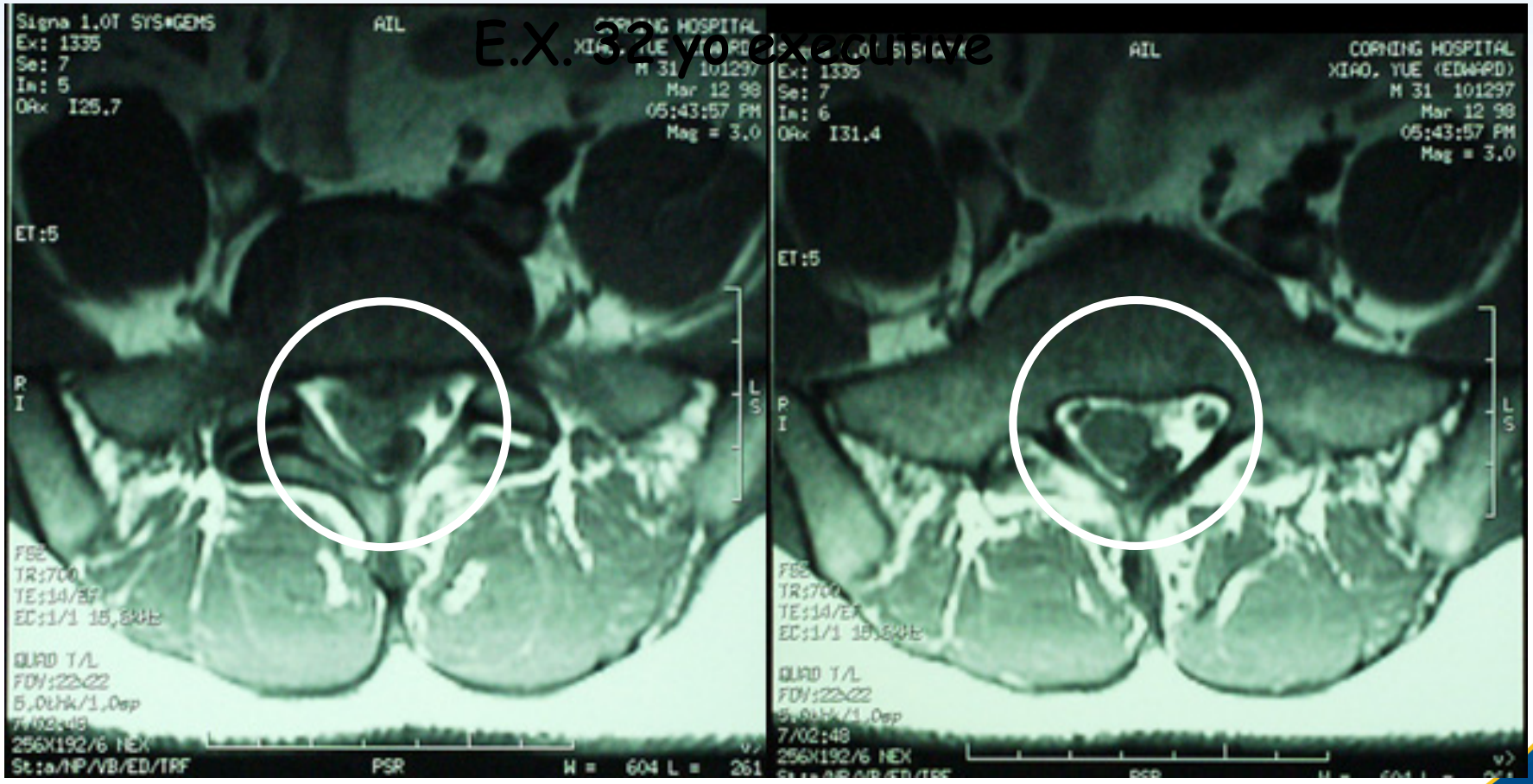
Large Disc Herniation & No Surgery



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Large Disc Herniation & No Surgery

E.X. 32 yo Corning executive: 6 Months Later

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Lumbar Spine Disease: 24 y.o. male

First visit w/PCP

- LBP radiating into L>R LE
- Pain worse in bed at night
- Occasional erectile dysfunction
- No hx of trauma/MVA
- Rx Flexeril/Vicodin

PCP Exam

- Trim, muscular male
- Normal ROM
- L. L5 hypesthesia
- Normal strength, reflexes
- Rectal exam normal
- (-) SLR test

Lumbar Spine Disease: 24 y.o. male

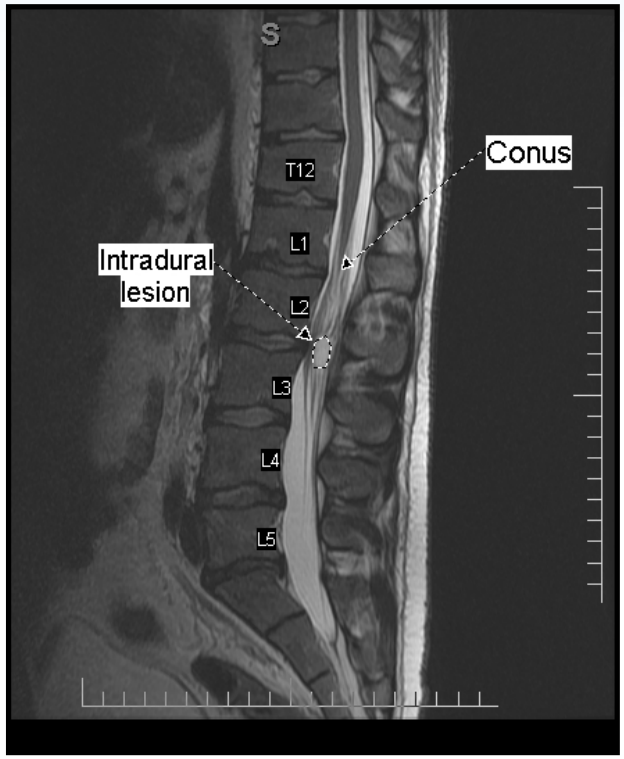
ED Visit 4 weeks later

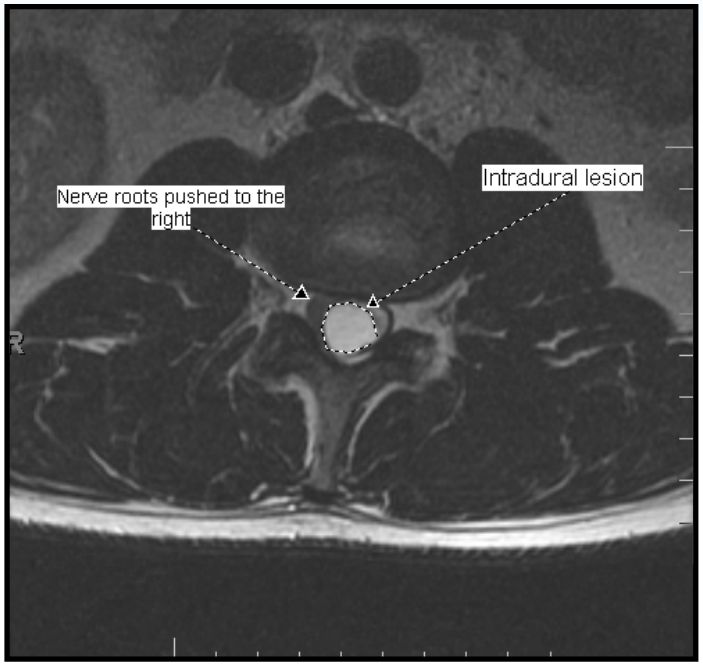
- Worsening LBP at night
- L leg pain to calf
- Analgesics not working

Exam

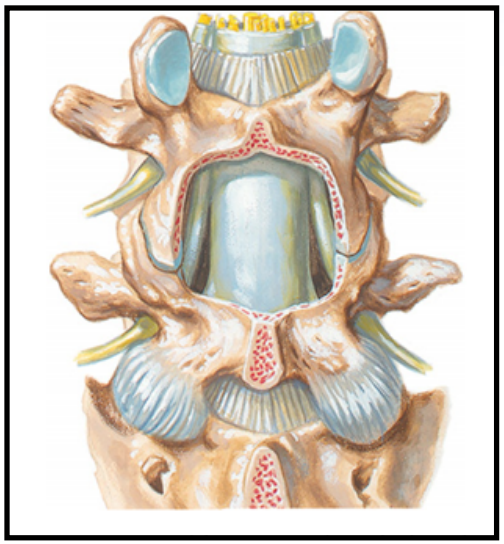
- Lumbar ROM normal
- Strength & reflexes normal
- Mild (+) SLR test
- MRI ordered

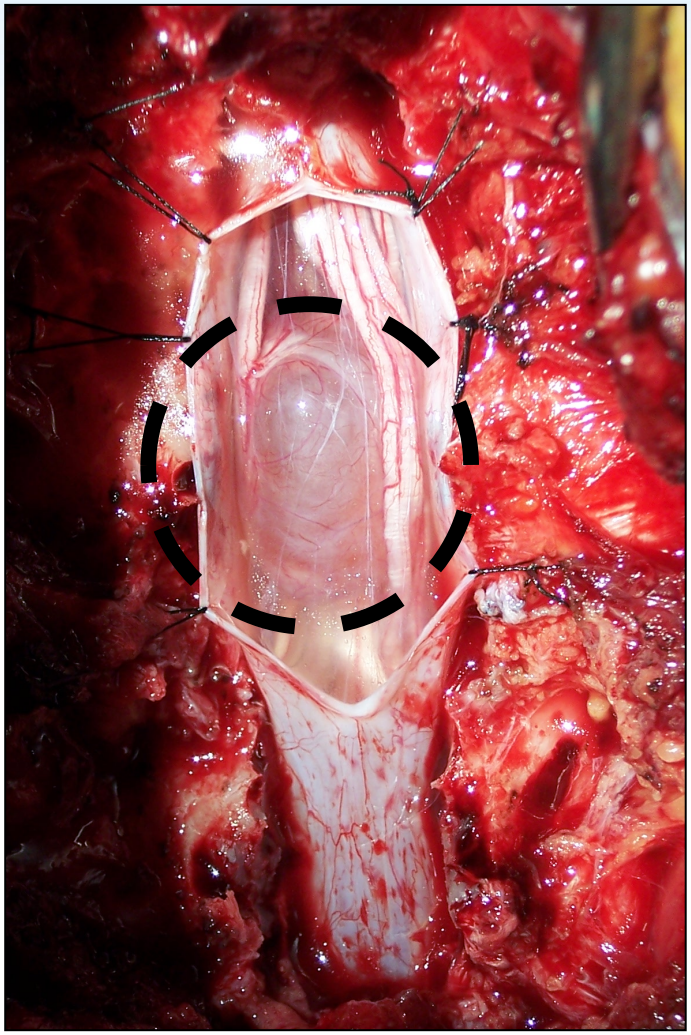
Lumbar Spine Disease: 24 y.o. male





Lumbar Spine Disease: 24 y.o. male

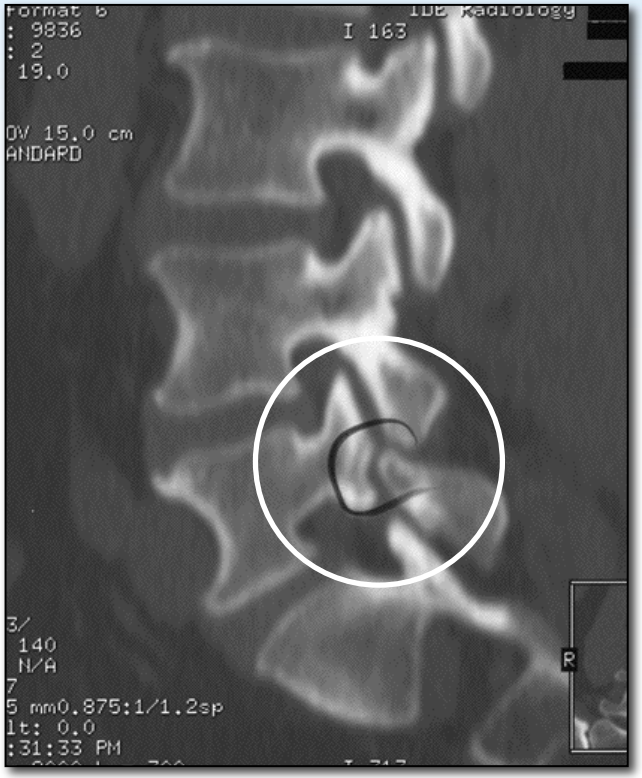




R.K-M 33 YO

- 10+ yr hx LBP
- 2003: MVA w/ acute increase LBP & R leg pain
- Exam:
  - ✓ 6' tall, 320 lbs, severe axial back pain,
  - ✓ Absent ankle jerks, R L5 hypesthesia
  - ✓ (+) SLR test on R
- Psychosocial:
  - ✓employed, married,wants to work
- MRI:
  - ✓ L5/S1: Grade 1 listhesis & bil lysis; R L4/5 HNP
- Conservative Rx exhausted: Chir, PT and ESI

R.K-M 33 YO



L5-S1 Spondylolisthesis

Spondylolysis ("pars fx")

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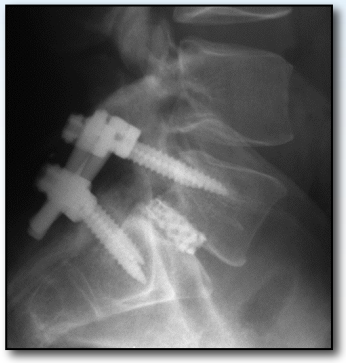
R.K-M 33 YO

- **1st Surgery (2/25/05):**
  - ✓ Posterior Lumbar Instrumented Fusion
  - ✓ Interbody device at L5/S1
  - ✓ BMP, local autograft



- **Outcome:**
  - ✓ Poor relief of axial back pain and R leg pain
  - ✓ Repeated conservative Rx failed to resolve pain (8/10)
  - ✓ Aqua Therapy, PT, ESI
  - ✓ Worked intermittently as accountant for auto dealership

R.K-M 33 YO

- **2nd surgery (6/5/06): 360^0 (Anterior & Posterior) Lumbar Fusion**
  - ✓ Anterior Lumbar Interbody Fusion (ALIF): L4/5 & L5/S1
    - L 4/5 interbody device
    - Removal L5/S1 cage, replace w/ allograft
  - ✓ Posterior segmental instrumentation w/ pedicle screws
  - ✓ Recombinant bone morphogenic protein (BMP)
- **Outcome:**
  - ✓ Poor relief of axial LBP and R leg pain
  - ✓ Repeat conservative therapy & ESI ineffective
  - ✓ Unable to return to work

R.K-M 33 YO

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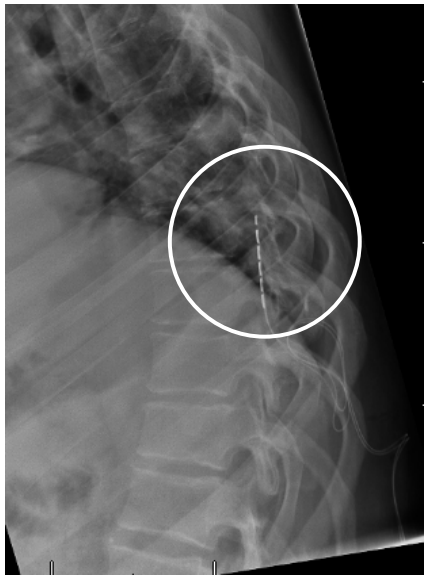
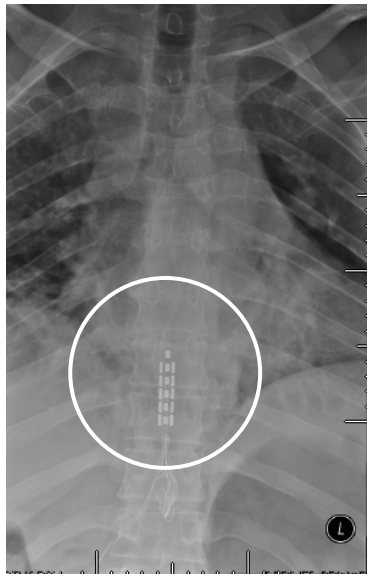
"Failed Back Surgery Syndrome FBSS"

- **Persistent pain following back surgery including:**
  - ✓ Leg pain: neural compression/irritation:
    - residual disc herniation, scarring, tethering & pressure on nerve root
    - segmental hypermobility - nerve compression or traction
  - ✓ Back pain: biomechanical, musculoskeletal derangement
    - altered joint mobility/hypermobility/fusion failure/scarring
    - spinal muscular deconditioning
  - ✓ Reorganization/Derangement of pain perceptual/modulatory systems?
- **Depression, anxiety, sleeplessness**
- **Predisposing conditions: diabetes, obesity, etc.**

R.K-M 33 YO
Implanted Spinal Cord Stimulator

- Percut SCS trial w/ successful coverage of LBP & R leg pain
- 1/16/09: permanent surgical implantation of "paddle" electrode
  - T 10 laminectomy
  - Eccentric (R.) placement (T8 - T10) to achieve best coverage





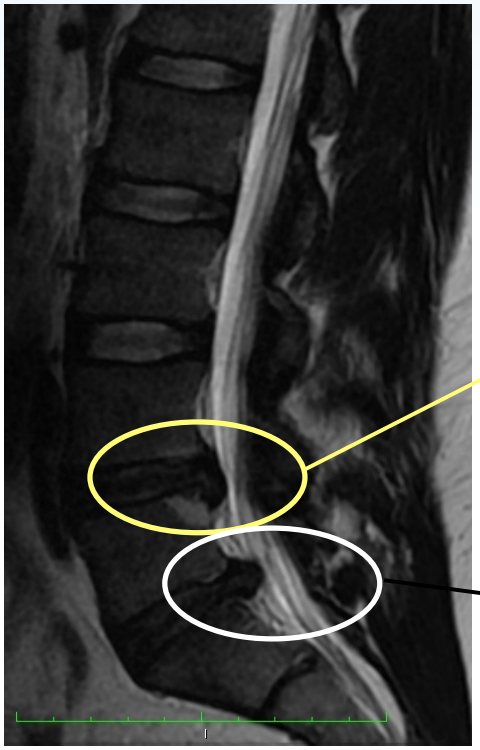
R.K-M 33 YO
Implanted Spinal Cord Stimulator

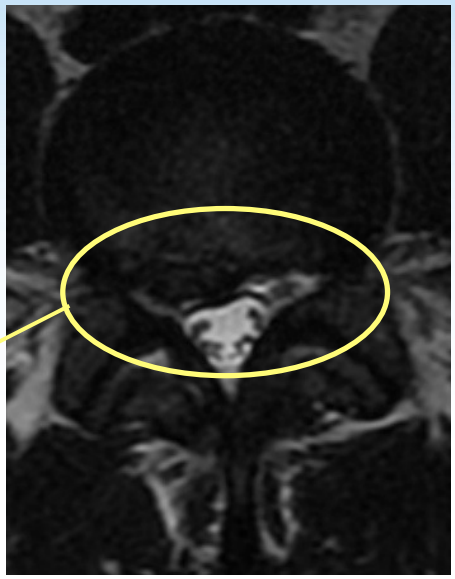
- **Immediate Post op status:**
  - ✓ 1/29/09: pain level rated at 2/10
  - ✓ 2/4/09 RTW as accountant
- **Current status (4/16/11) w/ continuous stimulation:**
  - ✓ Off morphine; Current meds: Ibuprofen (800 mg bid) & Lyrica
  - ✓ "95% control" of leg pain; "75%" control axial LBP

AC 34 yo male

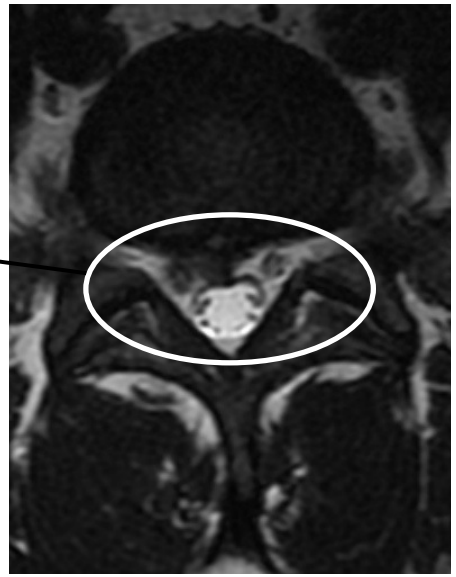
- 9/06: warehouse worker slipped & strained back at work
  - ✓LBP & severe R buttock pain w/ radiation to calf
  - ✓Failed conservative rx: ESI, PT
  - ✓OOW as of 11/06
- MRI 10/06:
  - ✓L 4-5 disc/osteophyte flattens nerve @ R lat rec
  - ✓L L5-S1 central protrusion
- Exam:
  - ✓DTR's KJ 0/0, AJ tr/1+
  - ✓Motor/sensory intact
  - ✓(+) R SLR test

AC 34 yo





L4-5



L5-S1

Pre Op

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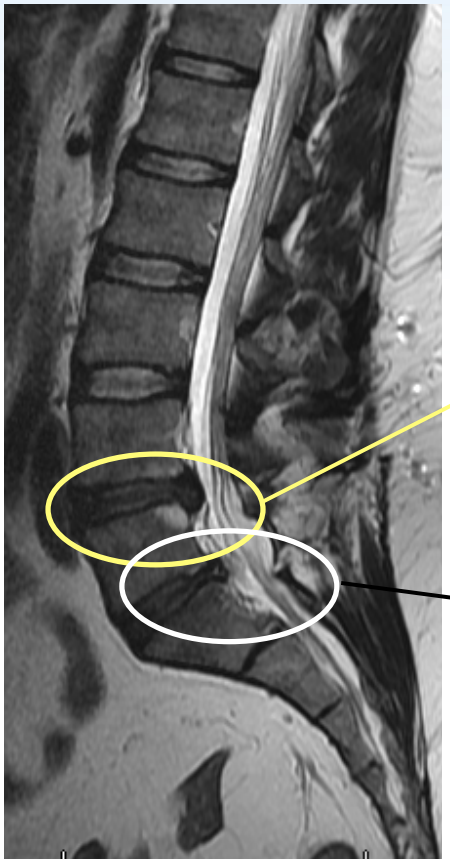
AC 34 yo

- 2/07: R L5 Hemi Lam/disc & L5 - S1 foraminotomies
- Post operative status:
  - ✓ 4/07 LBP & R buttock pain persists
  - ✓ 5/07 R Leg pain recurred, more intense than pre op
- Rx: Medrol, ESI
- RTW 7/07: continued LBP & increased R leg pain
- 2/09: MRI
  - ✓ R L4 - 5 lateral recess nerve root compression
  - ✓ R leg pain > LBP

AC 34 yo



L4-5

L5-S1

Post Op

Chiropractic vs. Reop vs. SCS?

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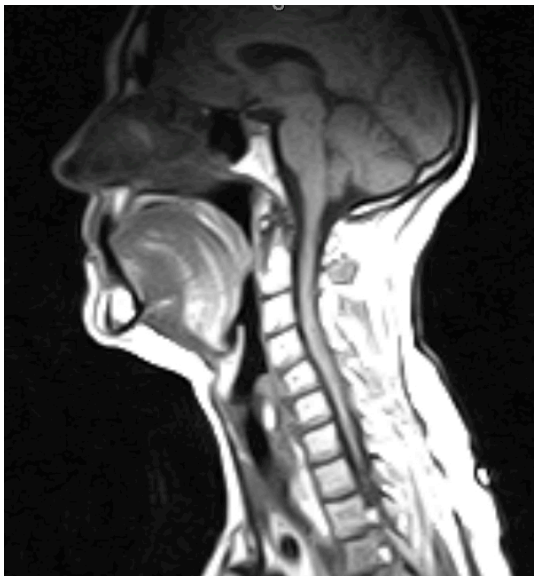
J.B.: 52 year old with R. arm pain

- 6 – 15 – 11: 52 y.o. woman fell while carrying a 100 pound cooker
  - Landed on L. side with bruises on shoulder and chest
  - Next day neck pain & R. arm pain, with numbness in thumb > index finger
  - Diane Reed, FNP (Woodhull, NY) recommended PT which was ineffective

2010 IBO World Championships

J.B.: 52 year old with R. arm pain

Open MRI (6 – 23 – 11)



"C5 – C6 broad central disc with compression on

the cord; mild bilateral foraminal compression"

J.B.: 52 year old with R. arm pain

- 7 – 14 – 11: Neurosurgical Exam
  - Markedly decreased cervical ROM to R.
  - 30^0 R. turning elicits pain & numbness to R. thumb
  - Diminished bicep/brachioradialis reflex
  - Decreased pin in R. thumb
  - No weakness in motor testing

J.B.: 52 year old with R. arm pain

What is the diagnosis?

A. Carpal tunnel syndrome

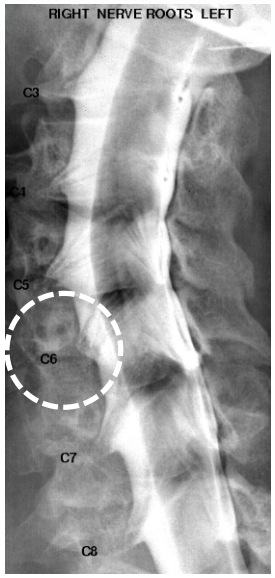
B. R. C5 radiculopathy

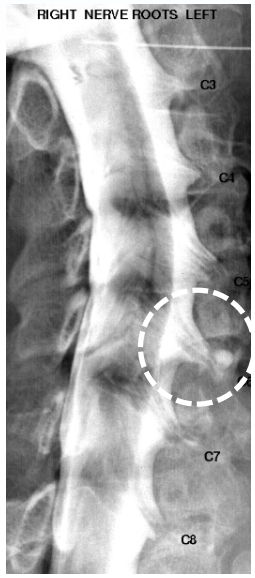
C. R. C6 radiculopathy

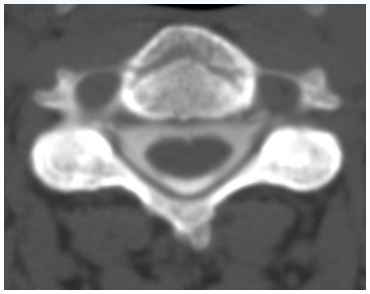
D. R. C7 radiculopathy

J.B.: 52 year old with R. arm pain

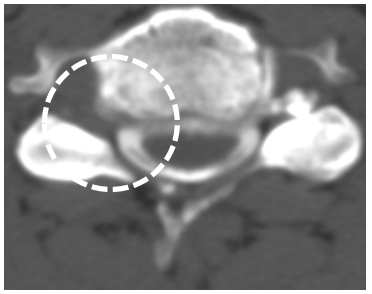
Cervical Myelogram & Post Myelogram CT



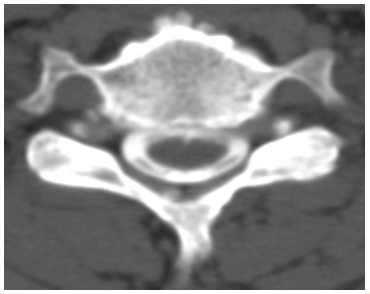




C 5



C 6



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J.B.: 52 year old with R. arm pain

- 7-14-11 Same day multidisciplinary evaluation
  - ✓ Neurosurgery (Dr. Pilcher)
  - ✓ Neuromedicine pain management (Dr. Markman)
  - ✓ Imaging (myelogram/CT)
- Recommendation: cervical epidural steroid injections
  - ✓ Goal is to avoid surgery & return to competitions
- 9-15-11 Neurosurgery Evaluation
  - ✓ Neck stiffness much improved; minimal numbness, pain resolved

J.B.: 52 year old with R. arm pain

- 9-15-11 Neurosurgery re - evaluation
  - ✓ Status post epidural injections x 2
  - ✓Neck stiffness much improved, ROM normal
  - ✓ Arm pain totally resolved
  - ✓ Strength improved, numbness nearly gone
- Recommend initiate training 11 – 1 - 11

CERVICAL EPIDURAL INJECTIONS

Armando Villarreal, MD, MBA
Clinical Assistant Professor
Department of Neurosurgery
University of Rochester Medical Center

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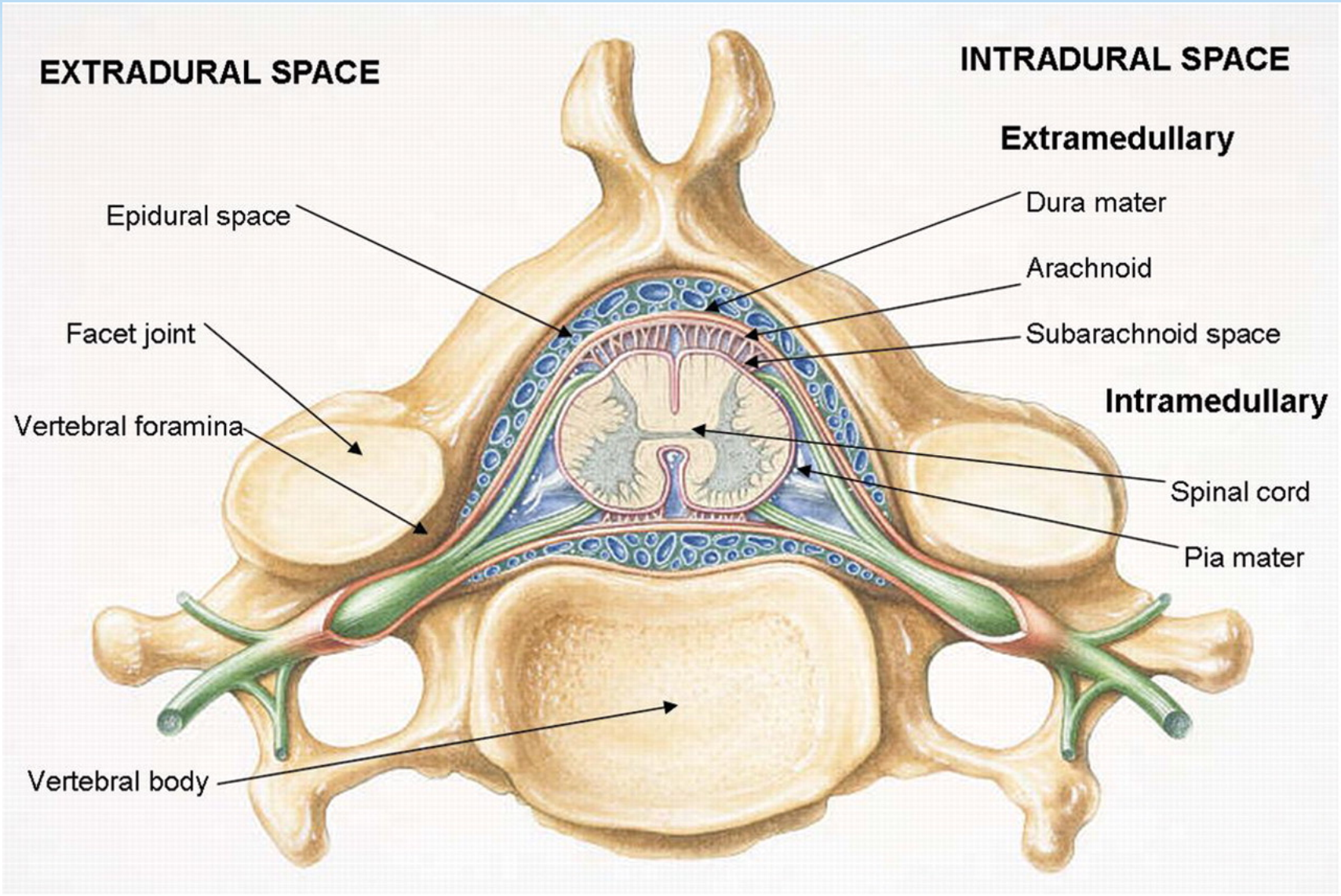
CERVICAL EPIDURAL STEROID INJECTIONS

Indications:

- Pain of acute herpes Zoster
- Acute vascular insufficiency of the upper extremities
- Cervical radiculopathy
- Cervical spondylosis
- Postherpetic neuralgia
- Postlaminectomy syndrome


EXTRADURAL SPACE
INTRADURAL SPACE
Extramedullary
Epidural space
Dura mater
Arachnoid
Facet joint
Subarachnoid space
Intramedullary
Vertebral foramina
Spinal cord
Pia mater
Vertebral body

Explanation of Procedure

Anesthetize

Insertion of Epidural Needle

Advance Needle

Omnipaque

Injection of Pain Meds

COMPLICATIONS

- Infections (i.e. meningitis, epidural abscess, etc)
- Neurologic Injury from direct spinal cord trauma
- Complications related to pharmacologic agents (i.e. steroids)
- Dural puncture complications
- Bleeding complications

Practice Guidelines for Chronic Pain Management

*An Updated Report by the American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine**

Consultants, ASA members, and ASRA members strongly agree that epidural steroid injections with or without local anesthetics should be used for radicular pain or radiculopathy. They all strongly agree that image guidance (*e.g.*, fluoroscopy) should be used for both interlaminar and transforaminal epidural injections. The Task Force notes that image guidance for transforaminal epidural injections represents current practice.

Anesthesiology 2010; 112:810–33

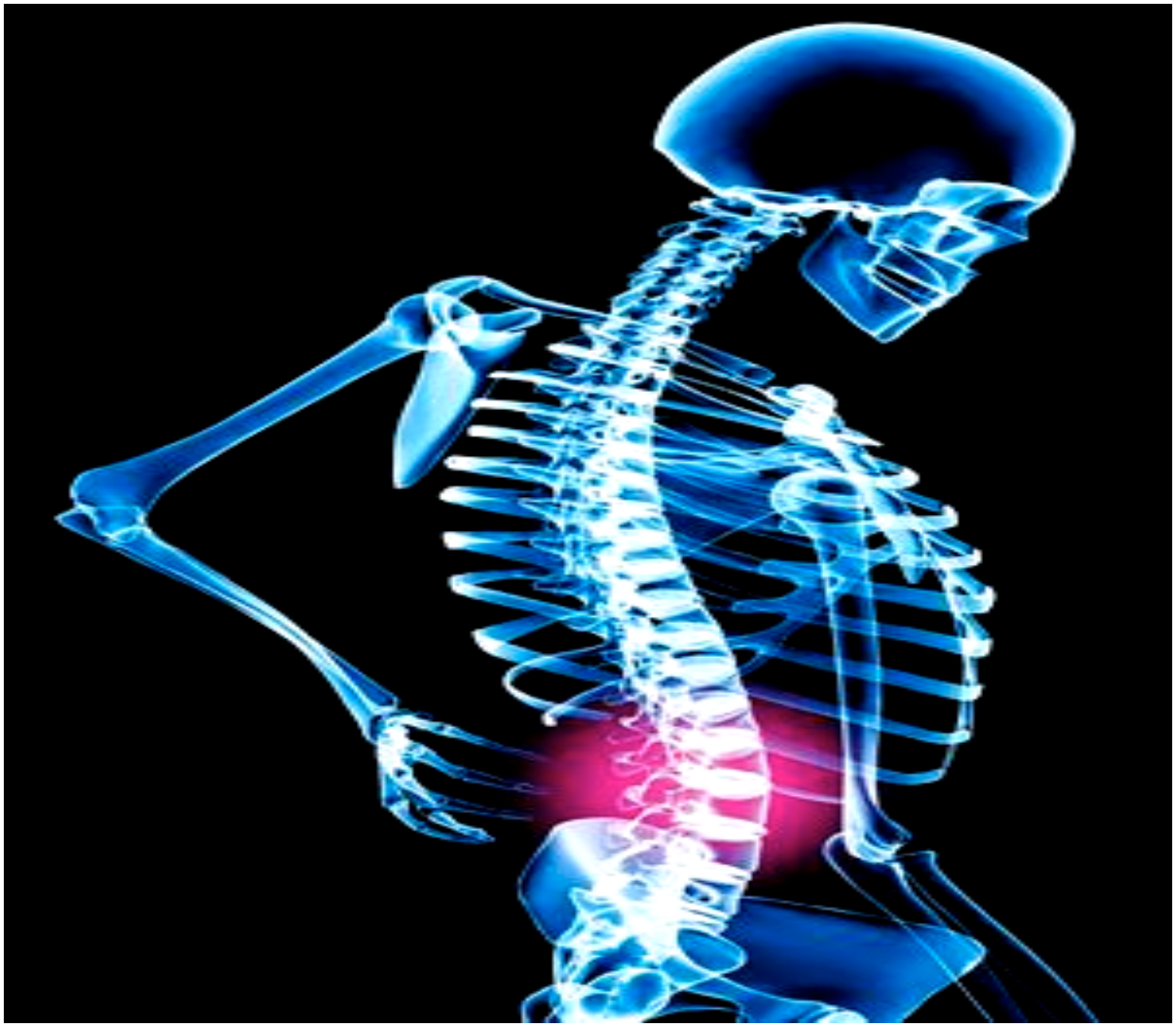
October 21, 2011

- *David B. Kartzman, DC*

- *Perspective of a portal of entry spine provider*

Management Decisions in Low Back Pain

HOW TO NAVIGATE A COMPLEX PROBLEM



Complexity

- Lower back pain is a complex problem because it is addressed by multiple providers with varying nomenclature and given the amount of money spent for care and for lost time with generally poor outcomes.

- Can we offer pt. centered care in a system which emphasizes both familiar treatment options as well as innovation?

Case Study

- 32 y/o male firefighter
- c/o lower back pain and intermittent pain either leg for one year prior to seeking care
- No trauma
- No radiation/sphincter dysfunction at presentation
- ROS non-contributory

Causes for Onset

- Most without single precipitating event

Common Denominators

- Flexibility--- What will the tissues allow us to do
  --- Speed, sustained contraction
  --- Spinal architecture (e.g. DDD)

- Ergonomics--- How do we perform our tasks
  --- Stresses at the L/S fulcrum
  (Nachemson, 1976)

Case Study cont'd.

- Exam:
  - Gross neuro intact.
  - Negative leg raise.

Case Study cont'd.

- Mechanical exam:
- Flexion to knees and ***limited L/S motion***
- Extension 15 with ***motion away from left***
- Left lumbar paraspinal hypertonicity

DDx

- Summary: **32 y/o healthy male with back pain for one year.** Neuro intact. ROM deficit.
- Duration of symptoms is a major concern: Concerns include disc/DDD, flexibility, spondylolysis/listhesis.
- Plain films ordered to r/o spondy, negative.

What's the diagnosis???

- Disc bulge
- DDD
- Lumbago/lumbalgia
- Sprain/strain
- Mechanical back pain
- Subluxation
- Disc derangement

Who Sees Patients with Back Pain?

Emergency Room

PCP

Physical Therapy

Neurology

PM &R

Pain Management

Chiropractic

Neurosurgery

Orthopedics

Psychology

Acupuncture

Treatment????

Nothing/Rest

NSAIDs

Muscle Relaxants

Exercises

Manipulation (SMT)

Spinal Cord Stimulator

Traction

TENS/E-stim/US

Surgeries

Epidural Steroids

Facet/RF lesioning

etc. etc. etc.

Management: Role of Chiropractic?

- Spinal Manipulation (SMT).
- Flexibility

- Given duration of symptoms and career---flexibility program prior to SMT may make SMT more successful.

- Educate patient (MGI-2007). Importance of body mechanics, monitor for changes, expected outcomes.

Fast forward

- *<u>Linear approach to care</u>*

- 2-3 months lapse: pt. calls the office and reports left leg symptoms including paresthesia and pain.
- Exam now shows L5 sensory loss and weakness.
- MRI confirms disc and neural compression.
- Pt. referred to Dr. Replogle and has successful decompression.

Lower back pain management

- Complex Problem
- Island Mentality

So, what's missing???

- Cohesion
- Coordination
- Collaboration

And…

- INNOVATION

Compare and Contrast

- Mid 60's male retired teacher with history of recurrent back pain episodes.
- Avid golfer.
- Always neuro intact.
- Episodes commonly well controlled– although past bout of radicular pain which was not. MRI: multi-level disc disease and foraminal narrowing. Remained neuro intact, symptoms resolved.

What do we do?

- Remember: DDD/spinal architecture/loss of flexibility

- Complexity: Which is most effective for him???

INNOVATION

- In office: Hip ROM and stretch receptor based spinal manipulation.
- Educate: Home flexibility and ergonomics based on "muscle memory."
- What else do we use?

Paging Dr.

- GOLF ??? !!!
  - Familiar motion
  - Requires rhythm between shoulders and hips
  - Teaches minimizing stresses at L/S fulcrum

Exercises should:

- Emphasize proper ergonomics
- Be consistent with expectations of pt's. flexibility
- Be familiar motions for pt. ("muscle memory")

- Golf swing Tennis Swing
- Throwing Football lineman
- "short-arm/moving A-frame"

Ponder

- Innovation: Is it possible to develop a system for describing lower back pain in a functional, as opposed to, anatomical manner?
- Can other linear systems of care be regarded as models for providing spine care?
- Can we identify a linear approach which utilizes the best care offered by the multiple “islands?”


MCHUMOR.COM by T. McCracken
"What luck! Just the doctor
I was going to refer you to."
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