"A Pain in the Back"

GPCE Workshop
Sydney Olympic Park
May 22-24, 2015

Speaker:

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FRIENDLY REMINDER:

PLEASE SWITCH MOBILE PHONES OFF OR SILENT

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Disclosure Statement

- Sponsor: C.N.S. Neurosurgery
- No other disclosures

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Learning Objectives

1. Identify **anatomical** structures underpinning "back pain"
2. Know the difference between "**radiculopathy**", "**myelopathy**" and **cauda equina syndrome**
3. Recognise clinical "**red flags**" warranting urgent referral of a spinal patient
4. Appreciate the "**conservative**" versus "**surgical**" options for back pain patients

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Back Pain – Anatomical Structures

Aka *“lumbago”, lumbar “strain” or “sprain”, “back pain”, “spine pain”, “buttock pain”*

A pain in any ANY part of the spine including paraspinal structures, even sacro-iliac joints

Many tissues / structures can generate this….Which ones?

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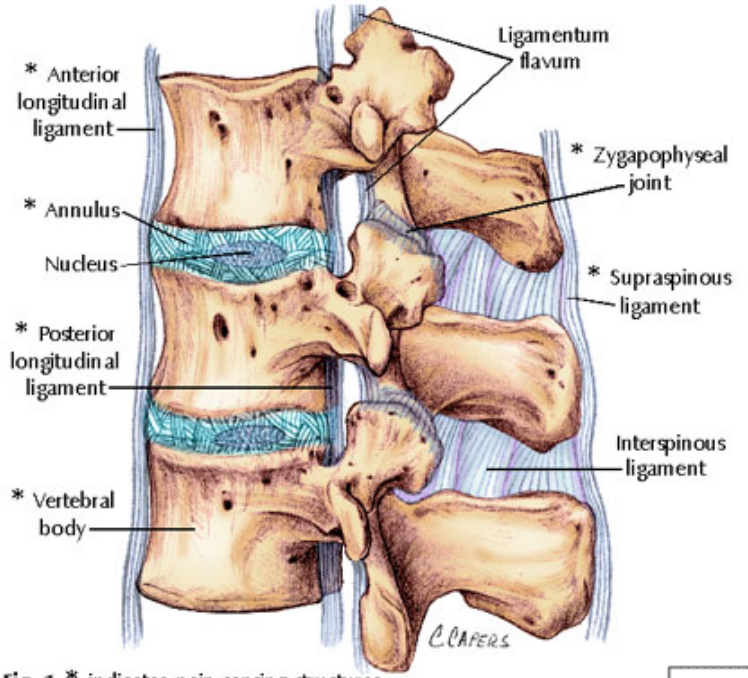
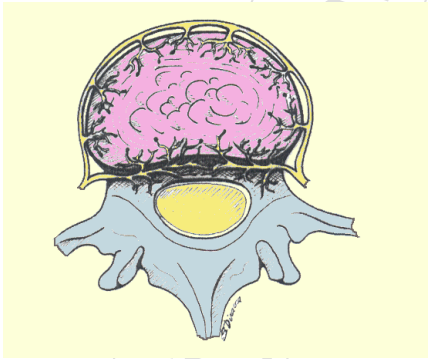
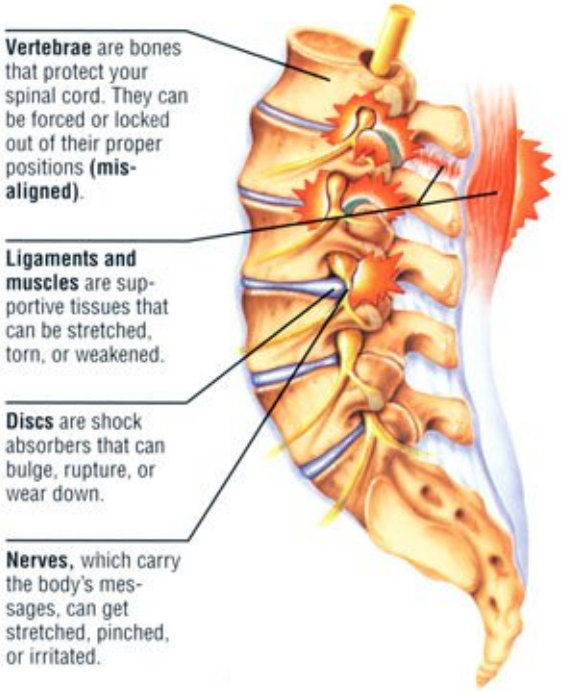
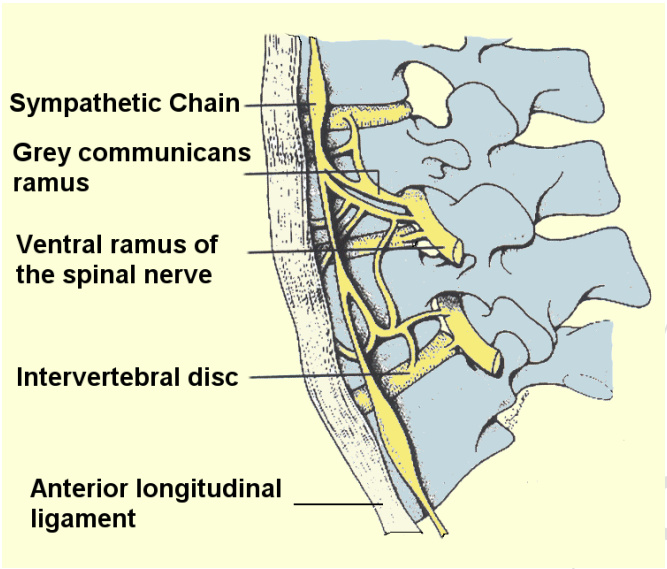
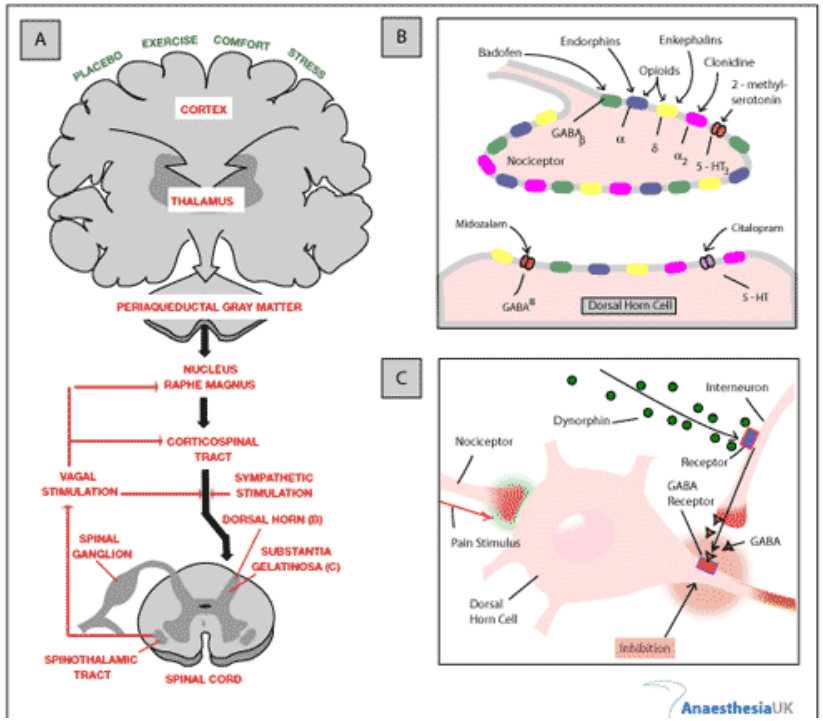


Fig. 1 * indicates pain-sensing structures









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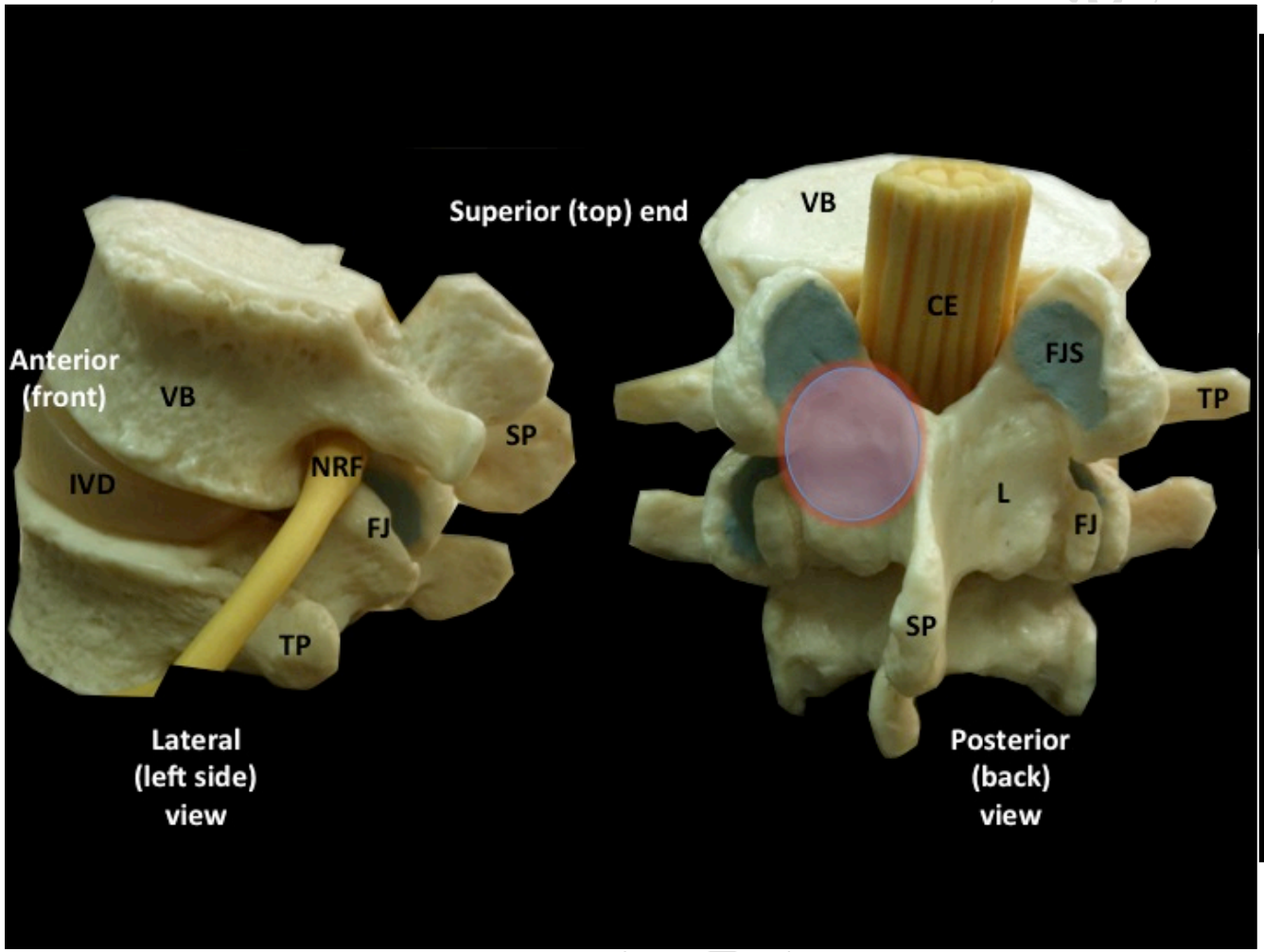
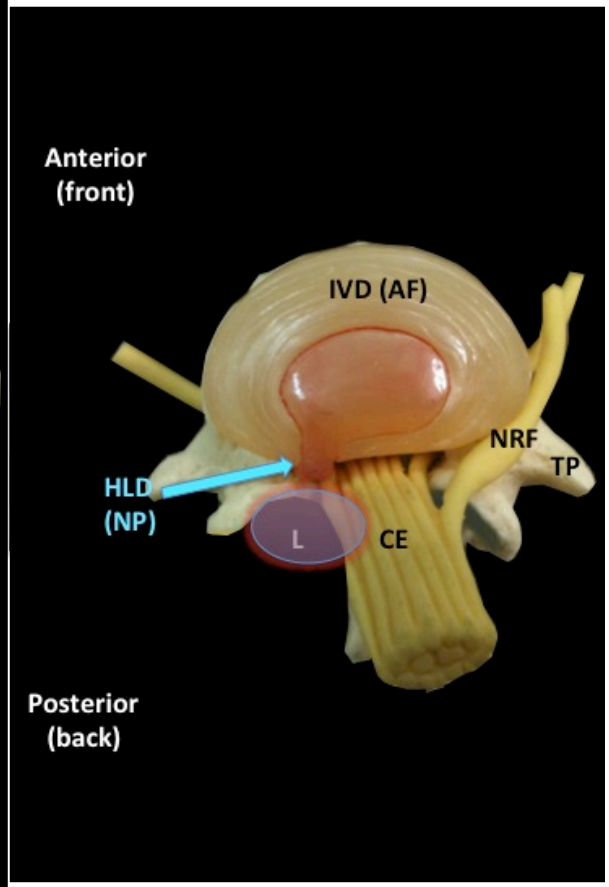
Back Pain – Key Anatomy





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Back Pain – Pain History

Presentation different between patients

Pain history….

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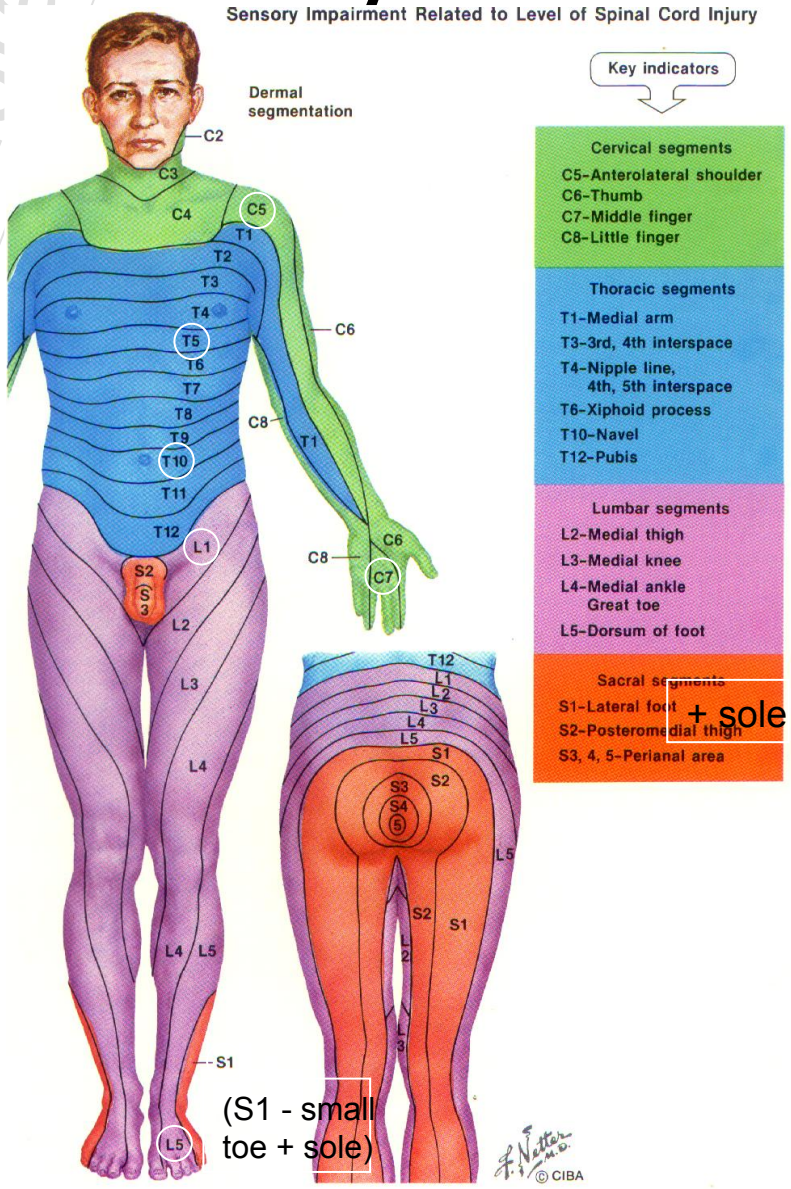
Back Pain – Pain History

Presentation different between patients

Pain history….

1. How long? Where?
2. What kind of pain – aching, electrical, stabbing/sharp, cramping, burning…
3. Time and timing?
4. Is it different to previous pains here?
5. What worsens, relieves? Valsalva?
6. Associated symptoms? Numbness, tingling, bowel/bladder, saddle anaesthesia, weakness, clumsiness, incoordination?



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Radiculopathy

- Spinal "root" pain: i.e., pain in a "dermatomal distribution"
- May present as "neuroclaudication" – ambulatory symptoms
- Sensory, motor, and/or reflex changes that correspond to that root
- There should *not* be bowel or bladder dysfunction
- There should *not* be upper motor neuron lesion signs
- Positive supine straight leg raise (cf. Waddell, sitting SLR)
- Valsalva symptoms
- There is usually a positive foraminal compression manoeuver
- **Urgent** referral is required if there is a **motor deficit**, e.g., foot drop

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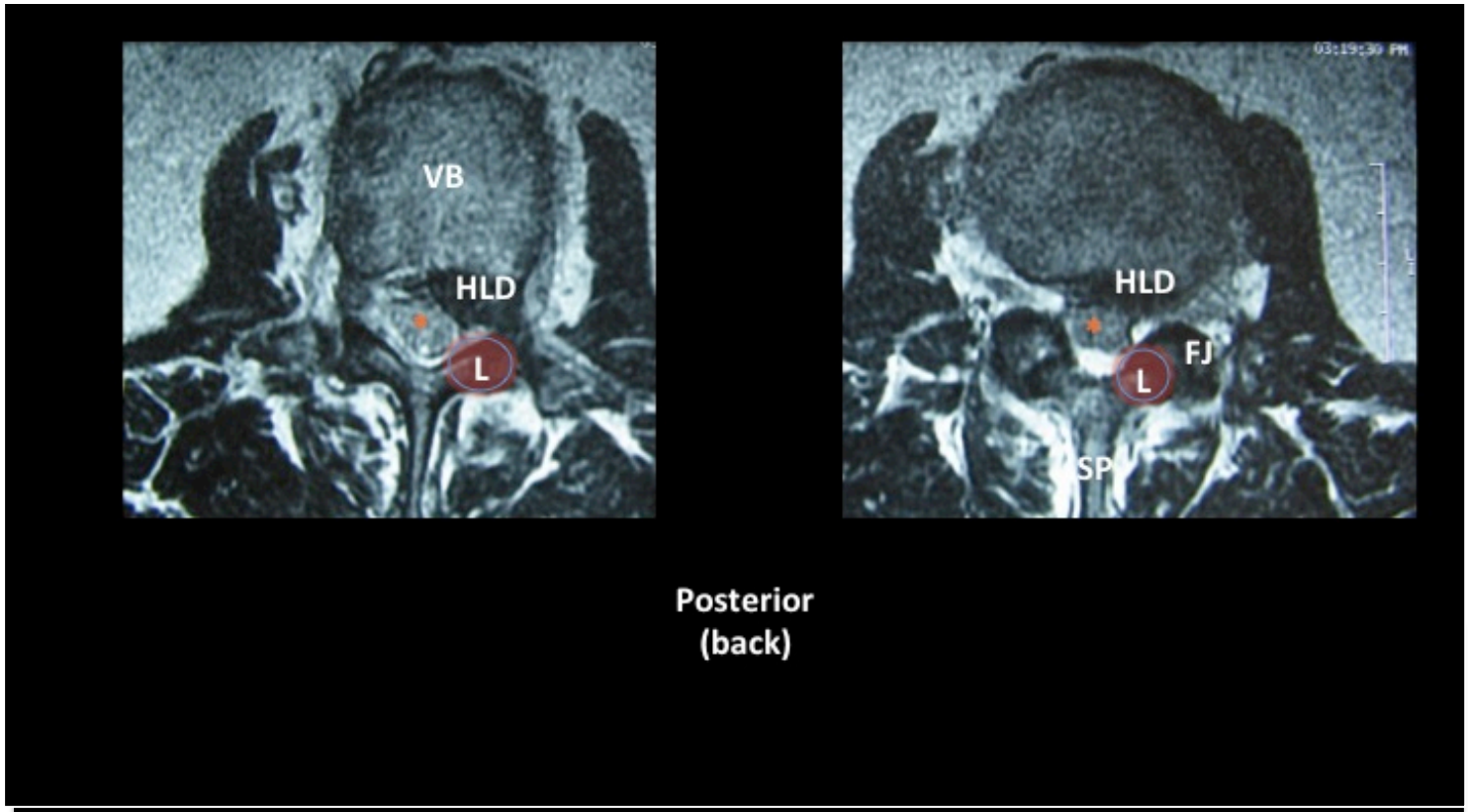

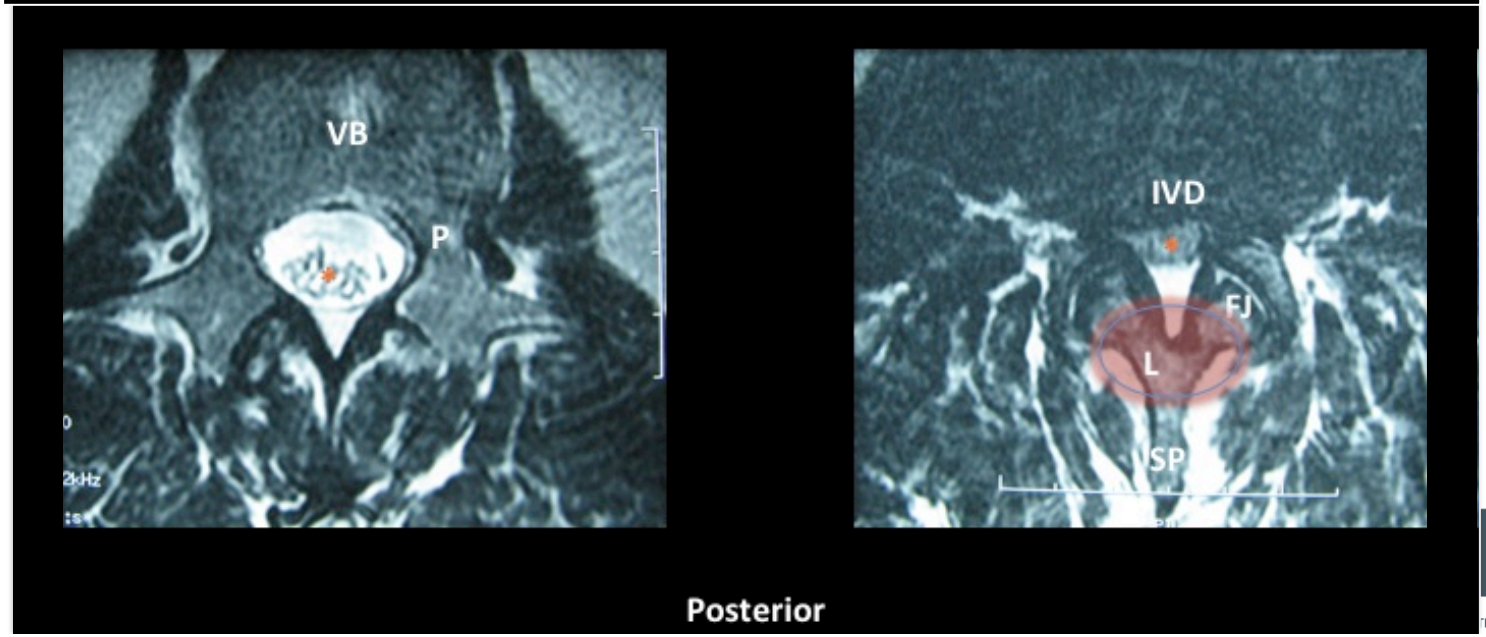

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Myelopathy

- Spinal "cord" pathology, e.g., compression from spondylosis or trauma; sometimes neoplastic, infective, or Chiari "syrinx"
- Multiextremity weakness
- Hyperreflexic changes (+ Hoffman, Babinski, ankle clonus)
- There may be spasticity and hypertonia
- There may be bowel and bladder dysfunction
- There may be a "Lhermitte" sign
- It may be part of a "spinal cord syndrome" such as Brown-Sequard, central cord…
- There may be severe (atypical) focal back pain from fracture
- **Urgent** referral is required when myelopathy is found

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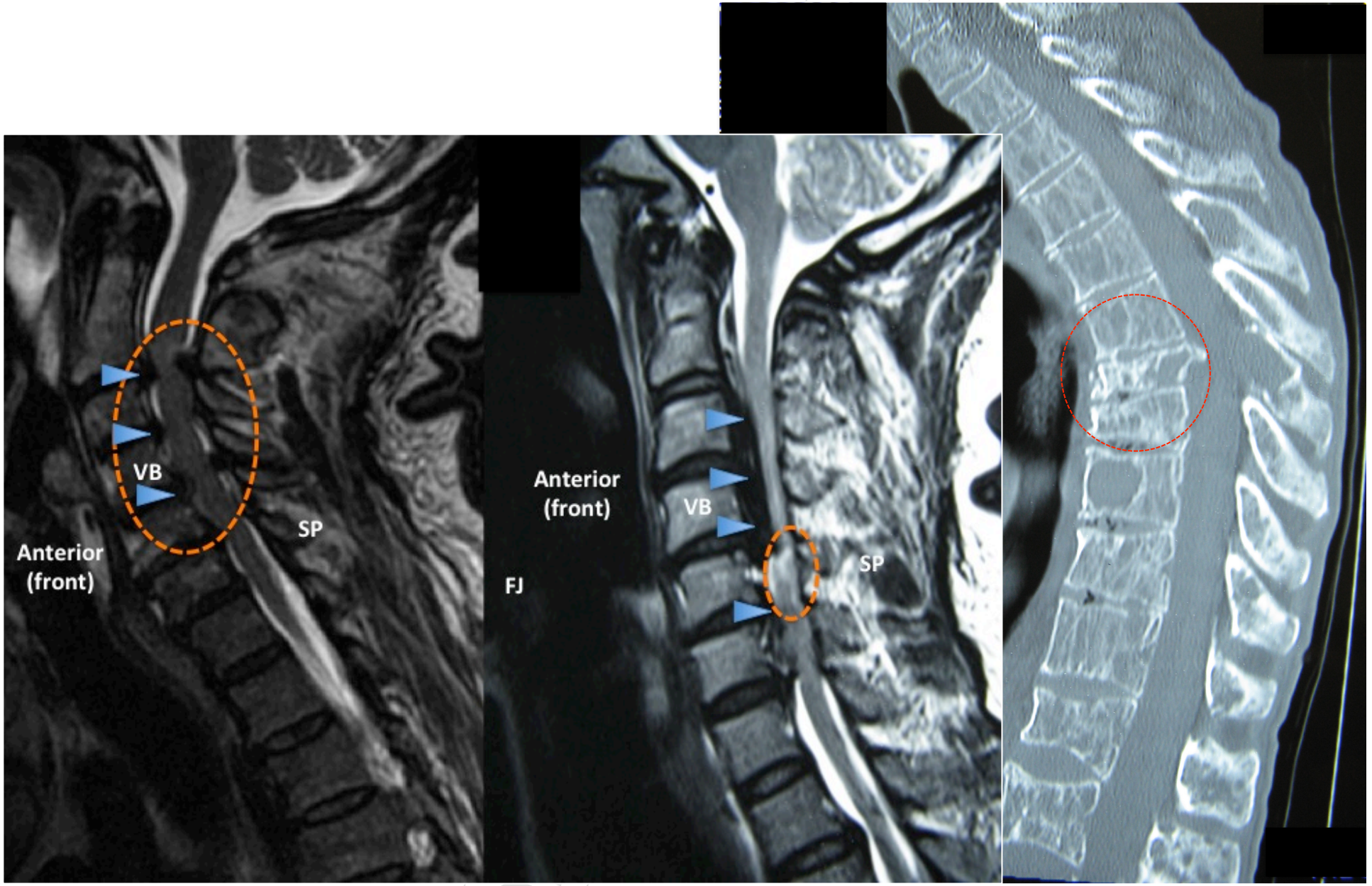

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Cauda Equina Syndrome

- A "polyradiculopathy" – multiple lumbosacral nerve roots are compressed
- It is a **neurosurgical emergency**
- Remember, it's a *syndrome* – collection of symptoms and signs; usually 3 or more of these:
  - Bowel and bladder dysfunction (urinary retention, or incontinence)
  - Saddle anaesthesia
  - Pain (usually both legs)
  - Weakness
  - Diminished sphincter tone
  - Loss of deep tendon reflexes
  - Often rapid progression

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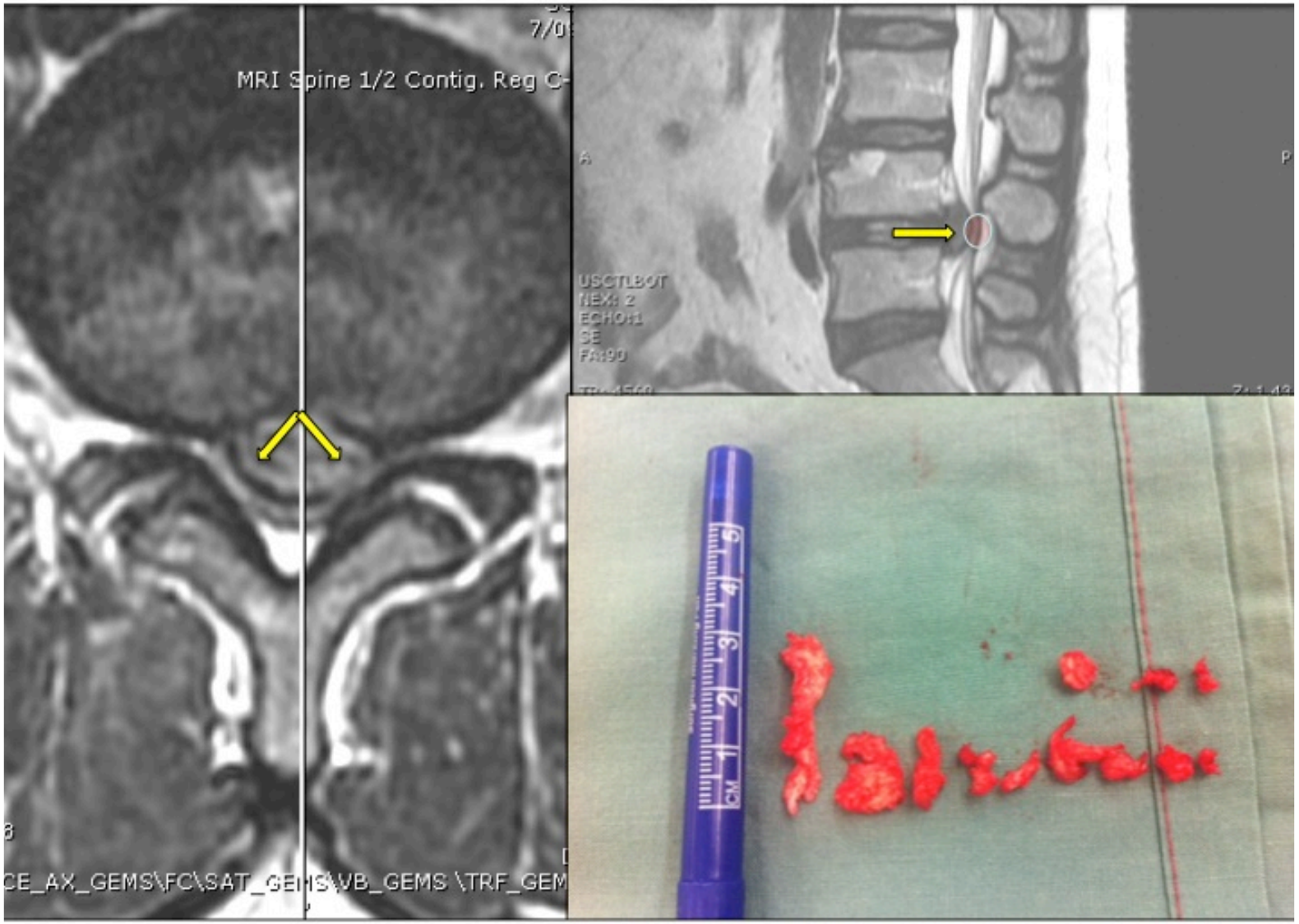

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Back Pain – Clinical Red Flags

Clinical "red flags" warranting referral to a neurosurgeon:

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Back Pain – Clinical Red Flags

Clinical "red flags" warranting referral to a neurosurgeon:

- Presence of one or more of these…
  - Weakness – including foot drop
  - Objective neurological signs in limbs – motor, sensory, reflexive
  - Persistent and medically refractory pain
  - Features of cauda equina syndrome (to E.D.) or a myelopathy
  - Any concerning progression in history (e.g., distribution), findings

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Back Pain – Key Investigations

Which investigations?

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Back Pain – Key Investigations

- REGULAR:
  - Plain X ray series (more useful for serial follow up)
  - CT spine (quick screen, low resolution, sometime overcalls or undercalls)
  - MRI (high resolution, often the best, but still one part of the workup)
- SPECIAL:
  - Flexion-extension lateral xrays
  - Contrast MRI
  - DEXA (X ray bone mineral density) scan – scores for osteopaenia versus osteoporosis
  - Nuclear Medicine Tc^{99m} "Bone Scan" (CT – SPECT)

[Other: e.g., Ca^{2+}, Vit D]

Normal bone density	T-score -1.0 or above	BMD not more than 1.0 SD below young adult mean
Osteopenia	T-score between -1.0 and -2.5	BMD between 1.0 and 2.5 SDs below young adult mean
Osteoporosis	T-score -2.5 or below	BMD 2.5 or more SDs below young adult mean

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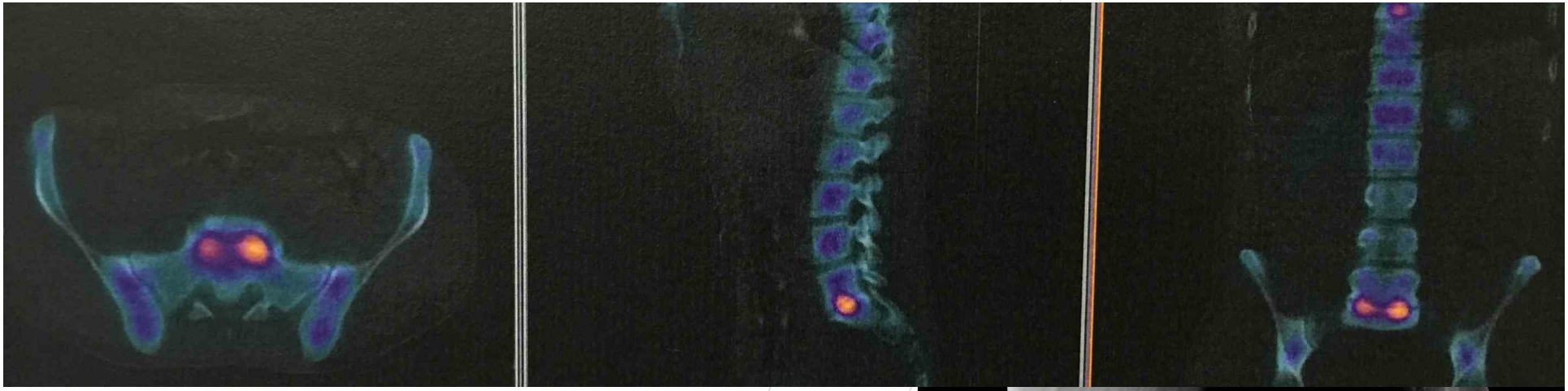

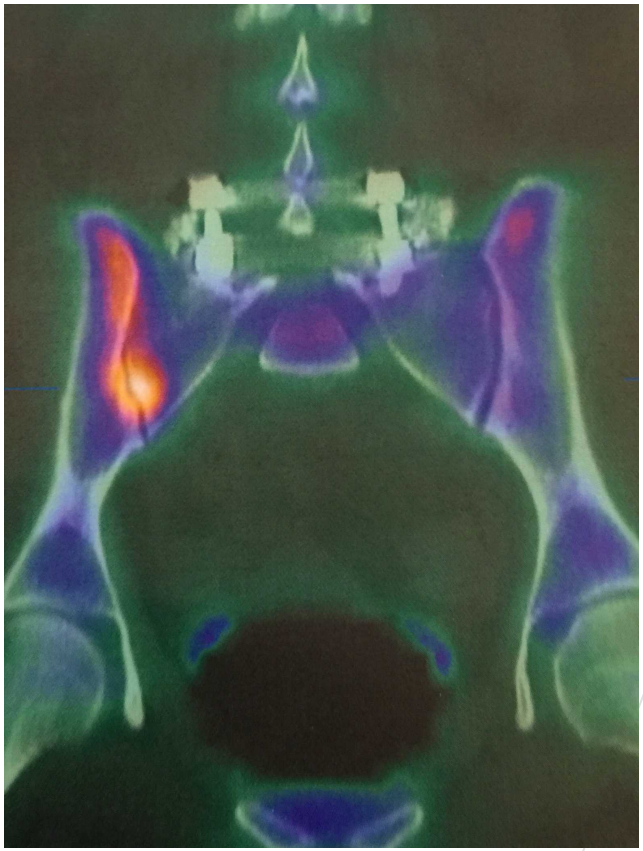

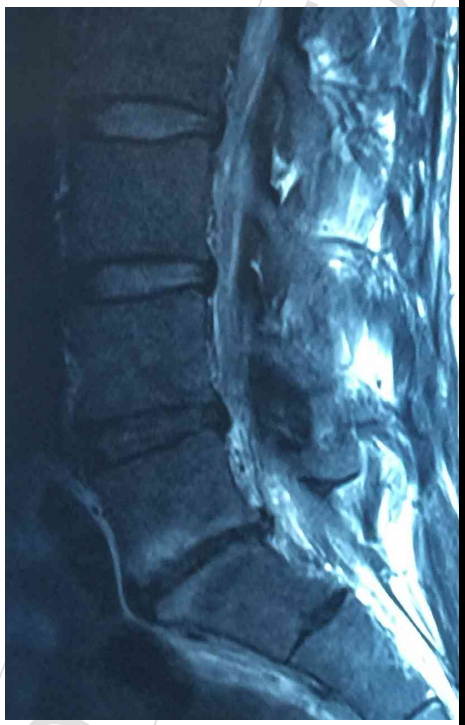

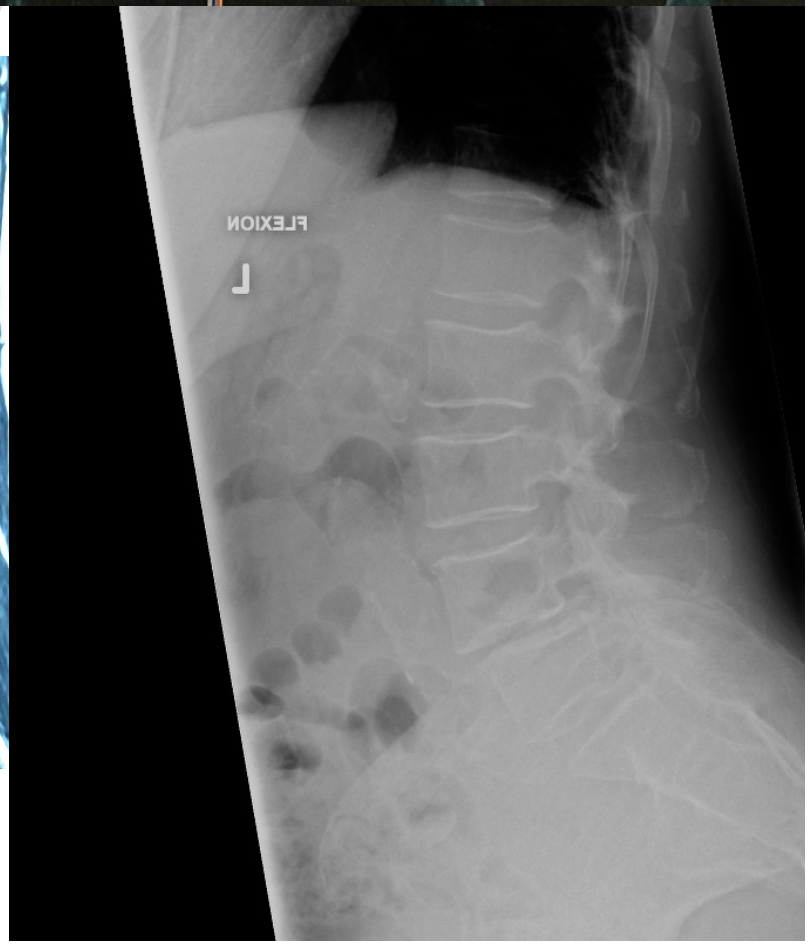
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Spine – Conservative Treatment

- CONSERVATIVE:

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Spine – Conservative Treatment

- CONSERVATIVE:
  - Pharmacotherapy (analgesic, anti-inflammatory, neuropathic (e.g., Lyrica/pregabalin – VGCC; TCADs, e.g., amitriptyline)
  - Physiotherapy (as tolerated, avoid manipulation, limited DTM; try posture optimisation, "ROM", core muscle strengthening, gentle massage, "dry needling", "TENS")
  - Hydrotherapy / swimming (core muscles)
  - Acupuncture
  - Occupational modification as needed
  - Nerve root injections…("root", "foraminal", "facet", "epidural")

- The above are okay UNLESS there is definite progression, or the presence of a motor deficit, or features of myelopathy or cauda equina syndrome

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Spine – Surgical Options

- SURGICAL:
  - Decompressive laminectomy with "rhizolysis" (chronic stenosis)
  - Discectomy (acute herniation)
  - Instrumented fusion (e.g., spondylolisthesis; severe degeneration - advanced "Modic" changes; mechanical instability)

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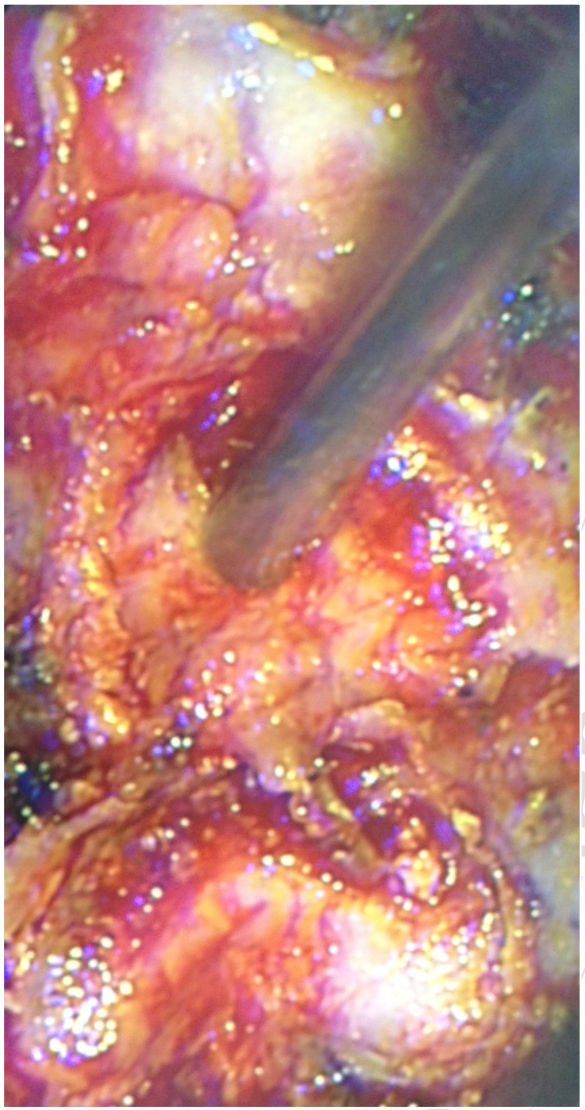

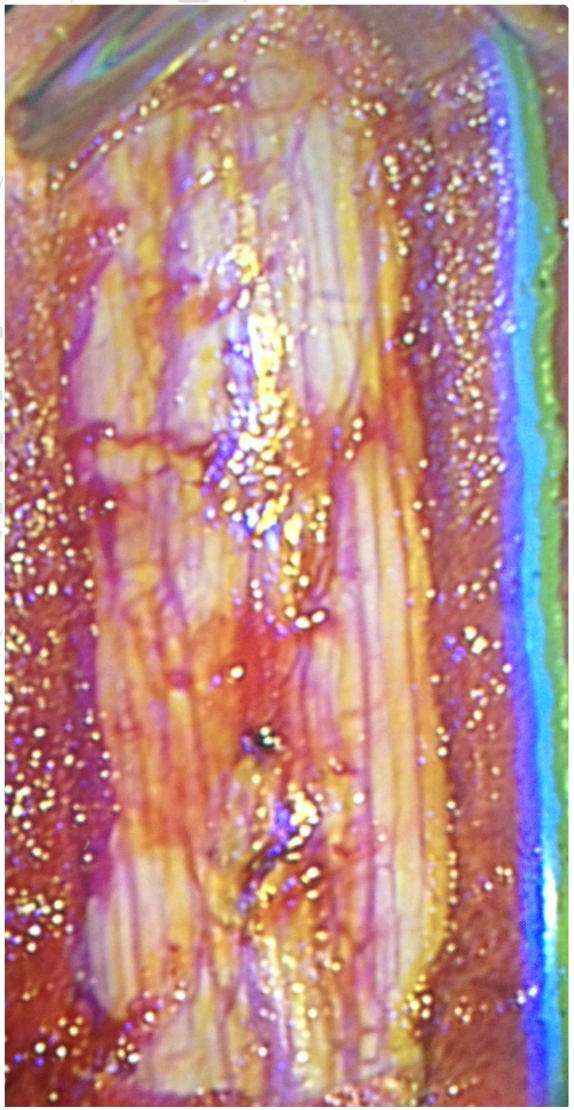

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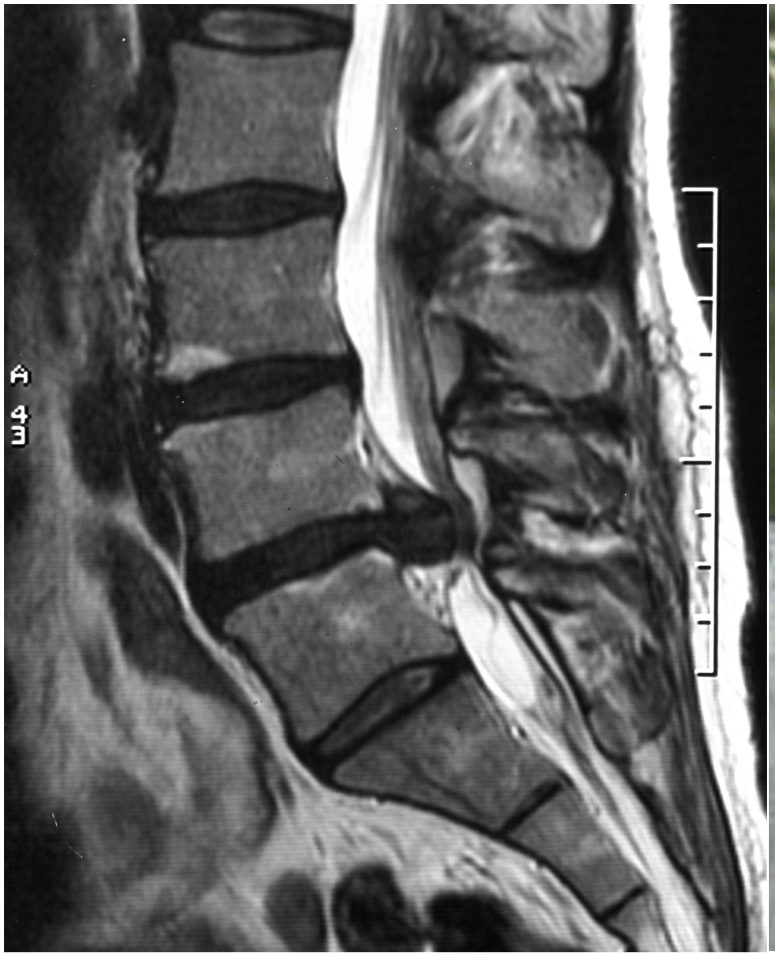
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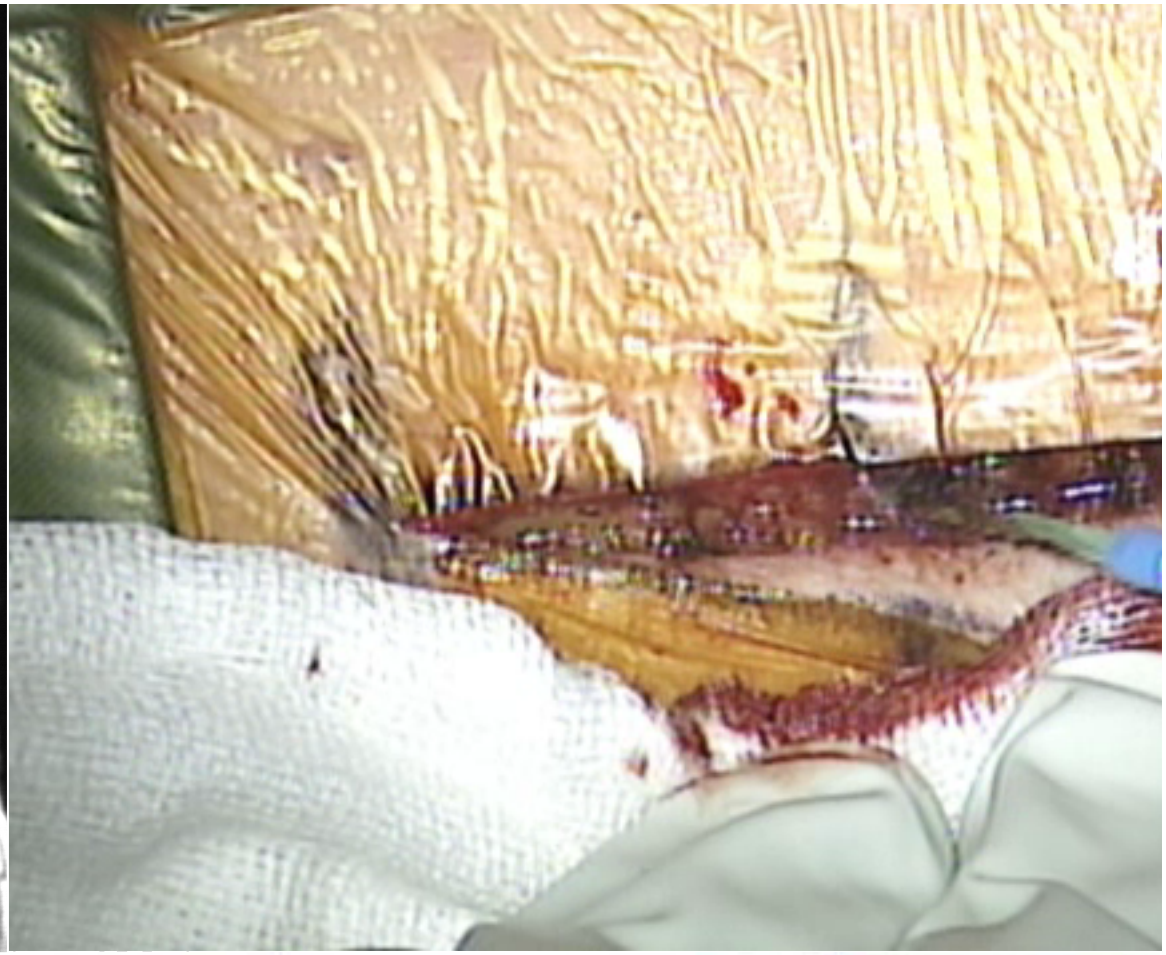

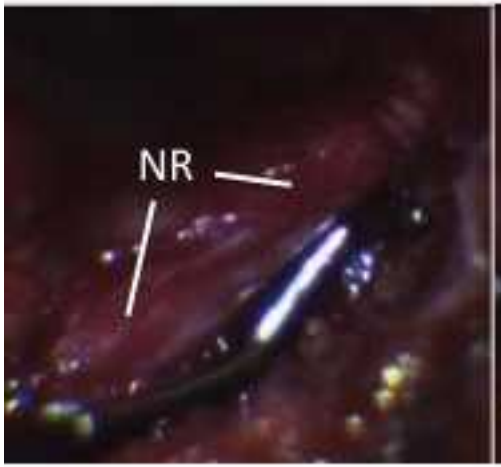
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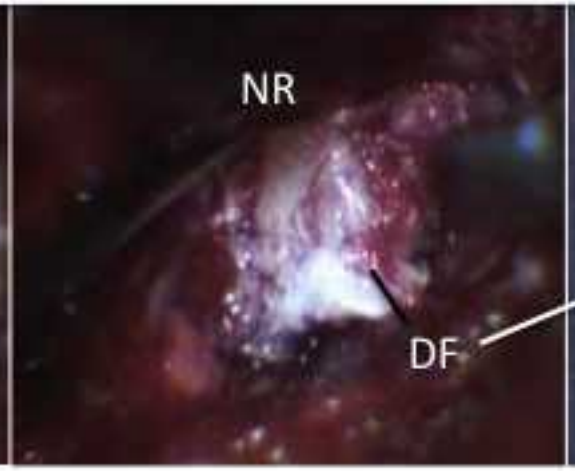
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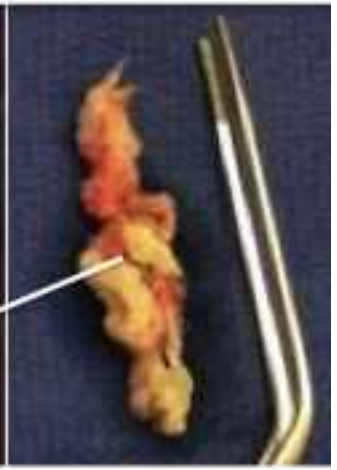
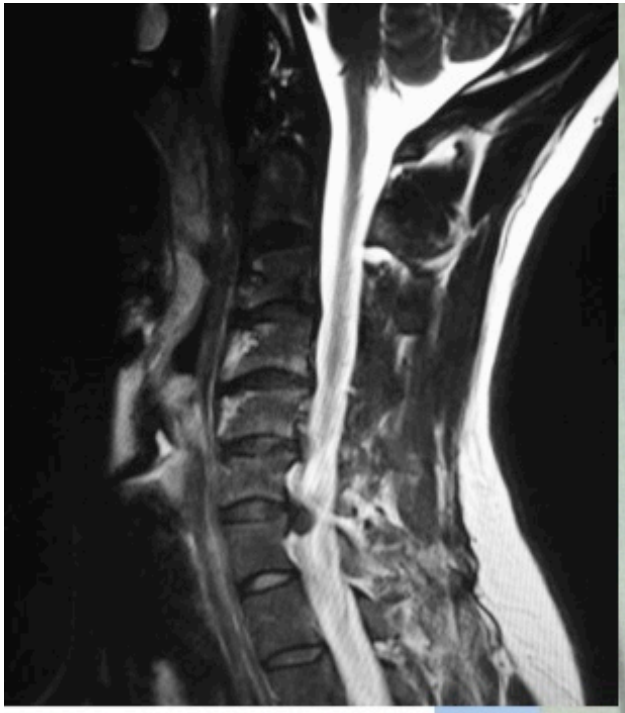
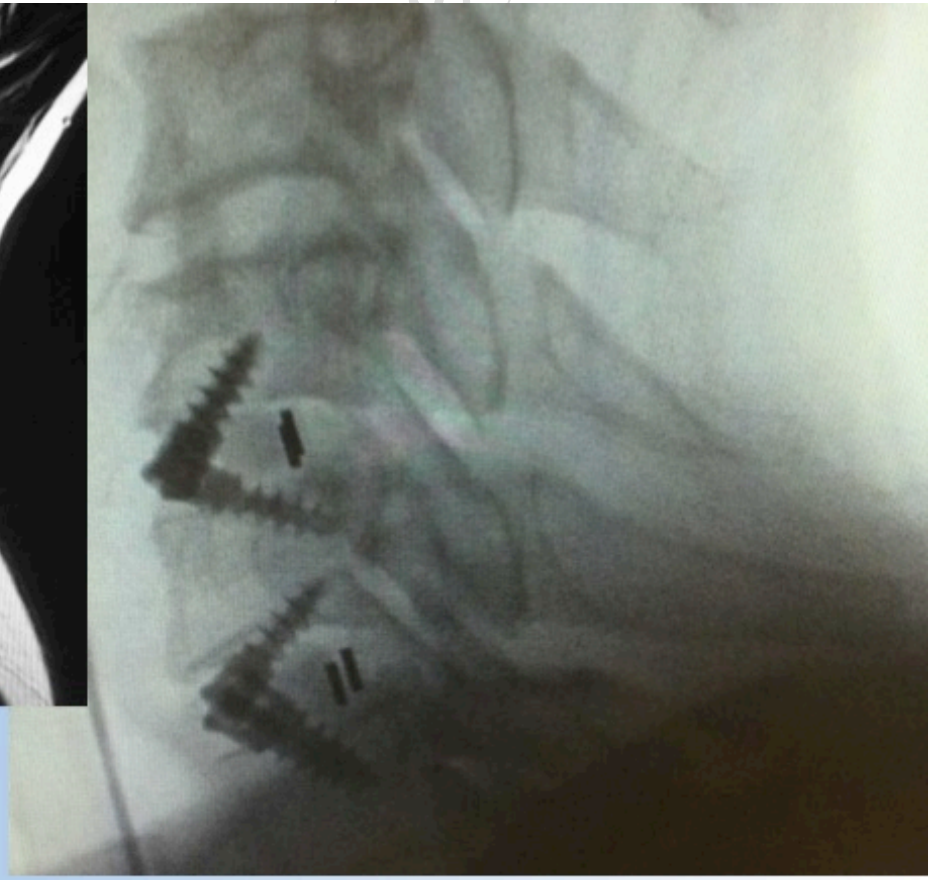
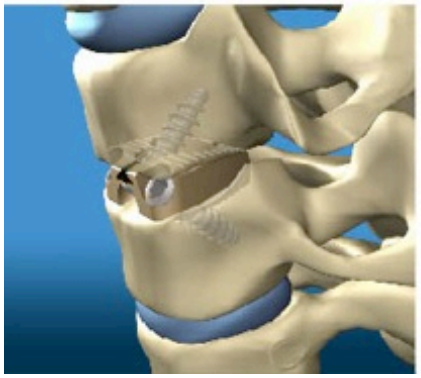


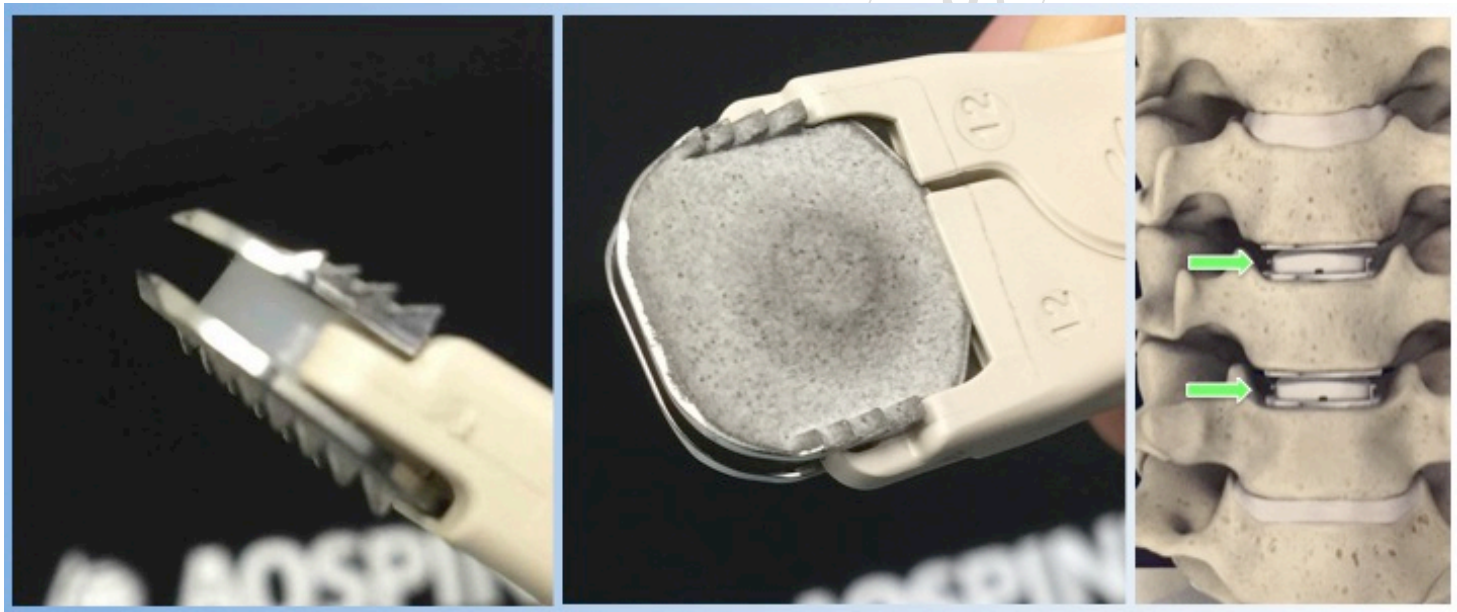




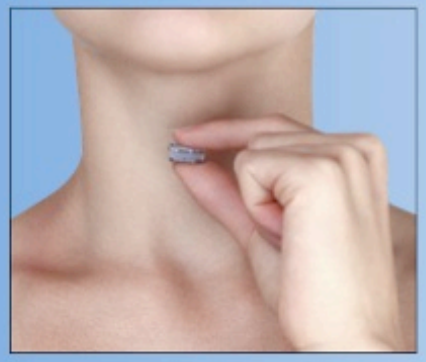


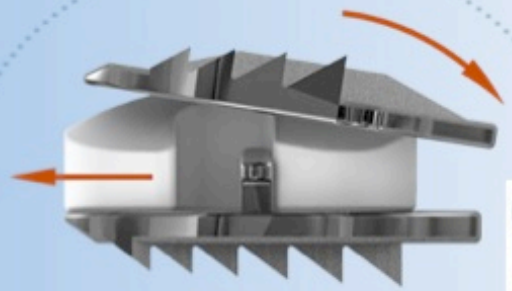
Orthotech's
Stalif C
Cage (Cervical shown)

Dr



The *Mobi-C* artificial cervical disc (*LDR USA* in conjunction with *Device Technologies Australia*)





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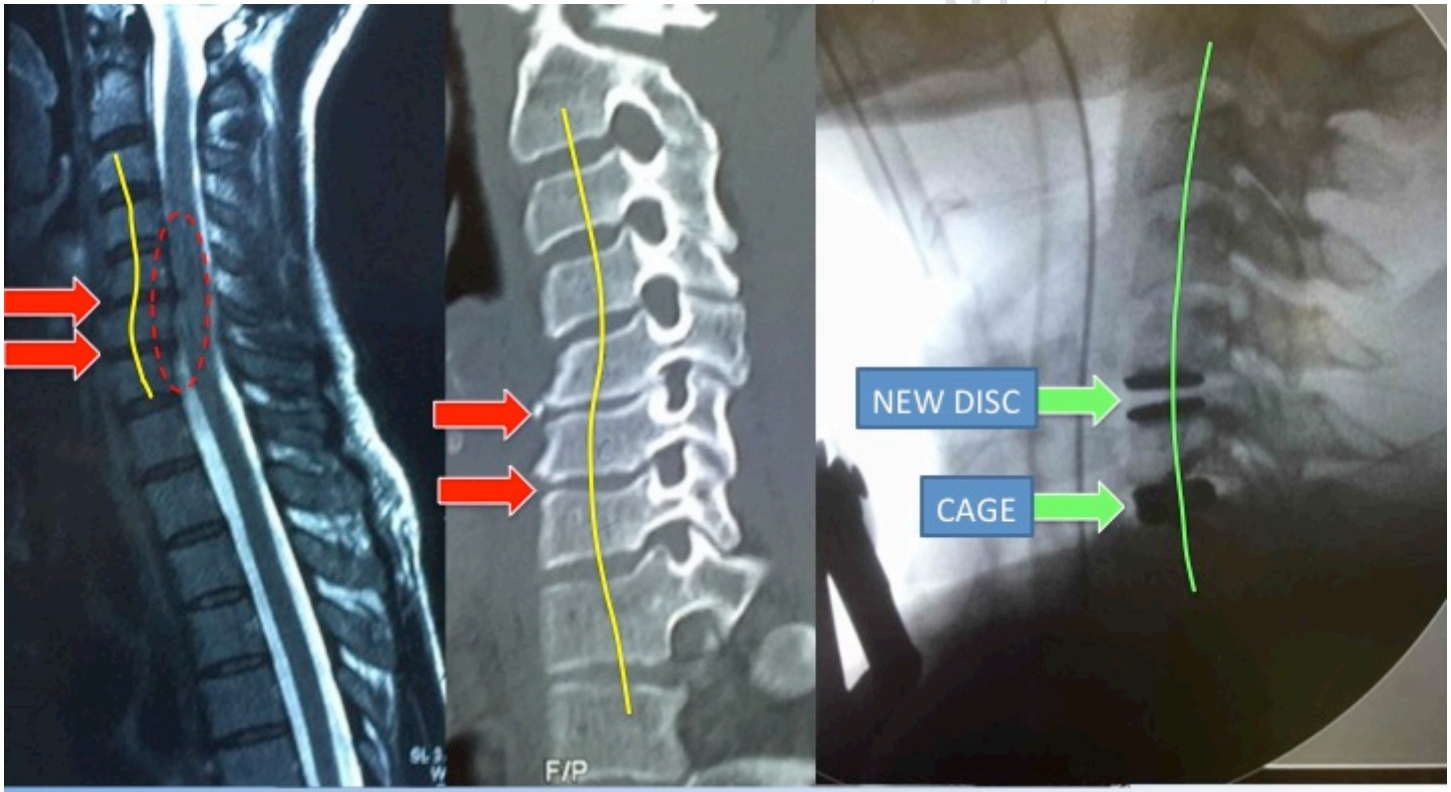

Pre-operative images above left and middle panel. Note the narrowed disc height (red arrows), and the abnormal curvature ("reversed lordosis"; yellow lines) of the cervical spine, with compression of the spinal canal (red dotted circle)**. Final Intra-operative Xray** above right shows excellent restoration of disc height and near-normal cervical spinal "lordotic" curvature. *Life Healthcare's* M6c Artificial Disc and Chesapeake Cage used for this patient as shown.

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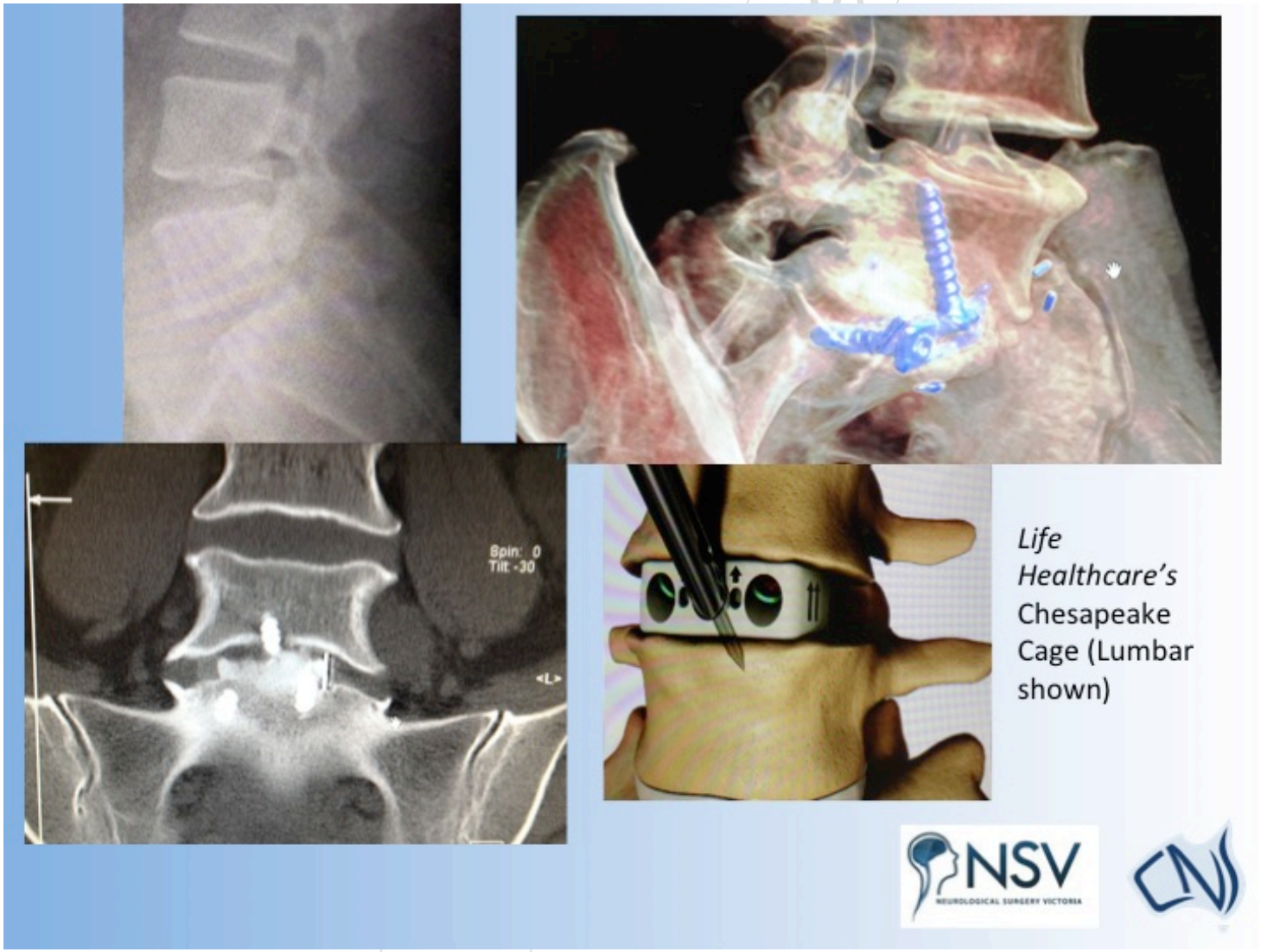
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Life Healthcare's Chesapeake Cage (Lumbar shown)
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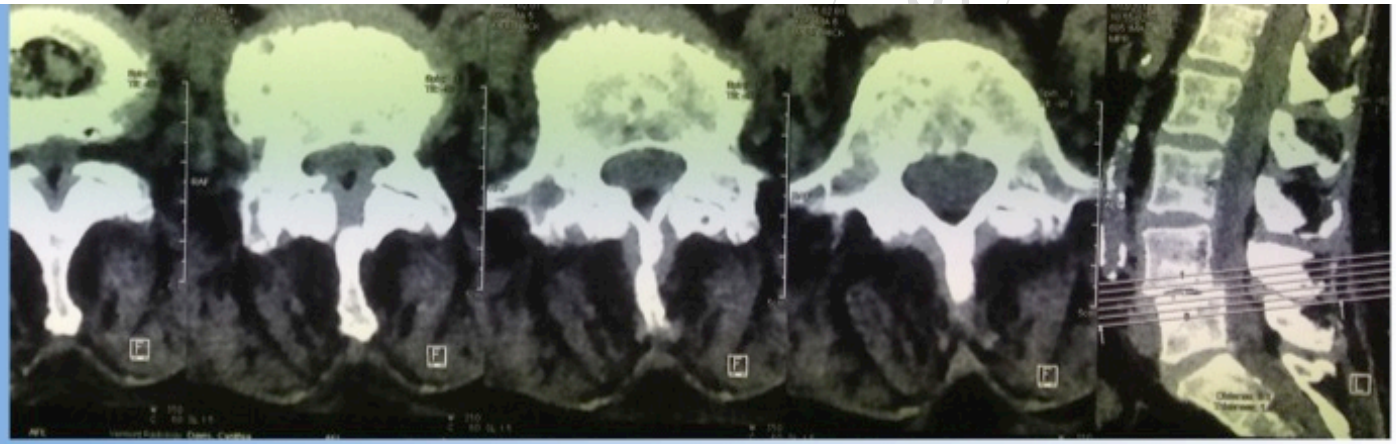

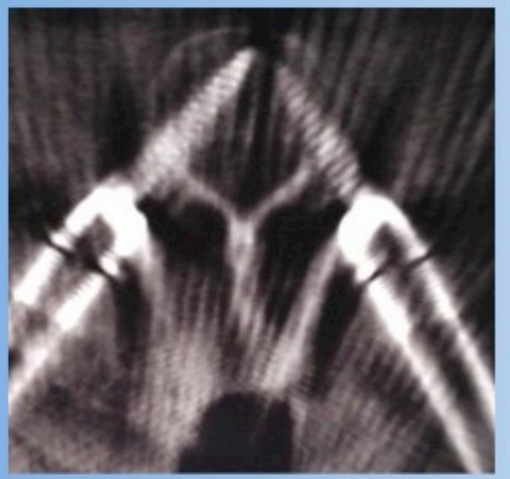

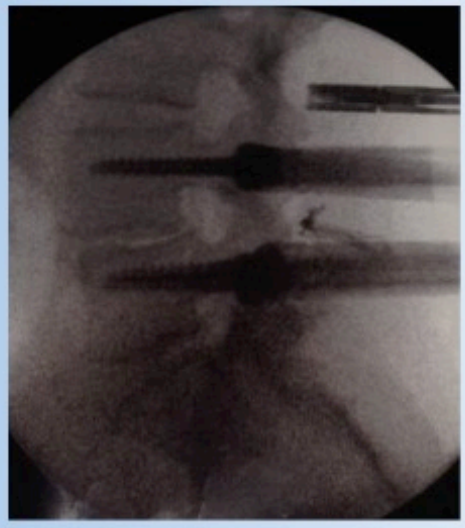

Neuronavigated Percutaneous Screws (Lumbar shown)

Dr

TAKE-HOME MESSAGES

- WHEN TO REFER (URGENT or EMERGENCY)
  - Any motor deficit (may not improve after a week of impairment)
  - Fixed sensory deficits – sustained numbness and tingling are concerning
  - Rapid progression or definite progression
  - Cauda equina syndrome (emergency)
  - Presence of myelopathy

- IT's NEVER TOO LATE, but….what to avoid….
  - Avoid fixed motor deficit (generally not for conservative Rx)
  - Avoid onset B&B impairment (often retention before frank incontinence)
  - Avoid "wheelchair" or "bed-bound" state (especially in elderly)

  NB: Surgery well tolerated up to late 70s, but depends on co-morb., BMD

  Happy to give an opinion – conservative vs surgical Rx

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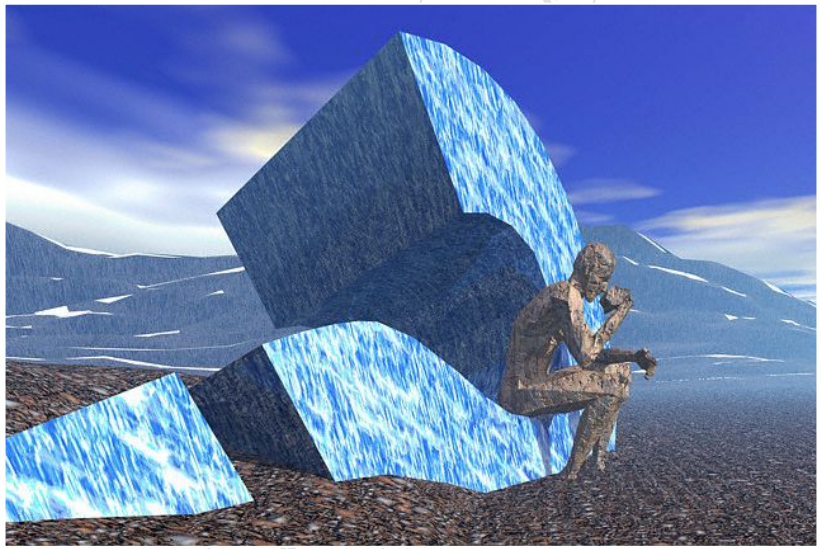
THANK YOU



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