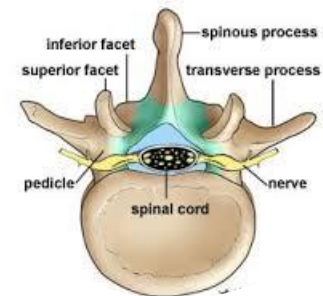
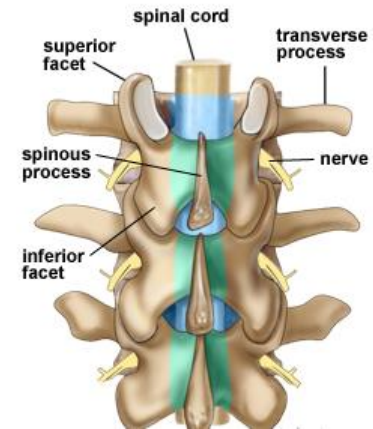
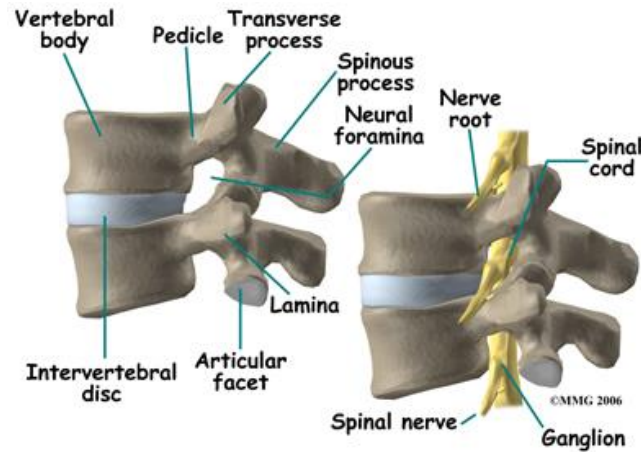
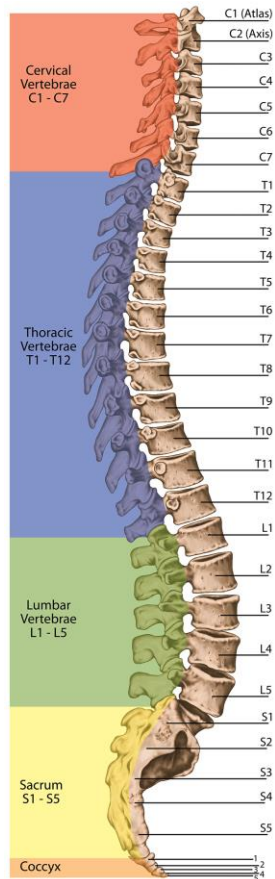


Slipped Disc or Disc Prolapse or Disc Herniation

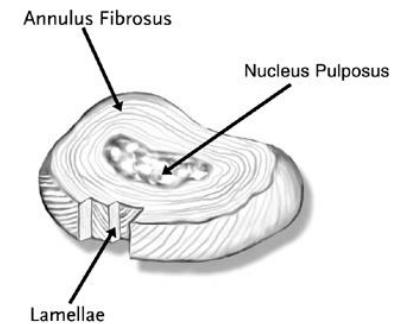
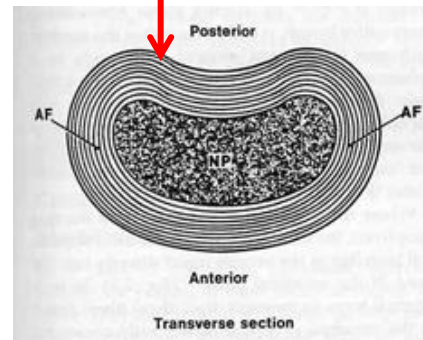
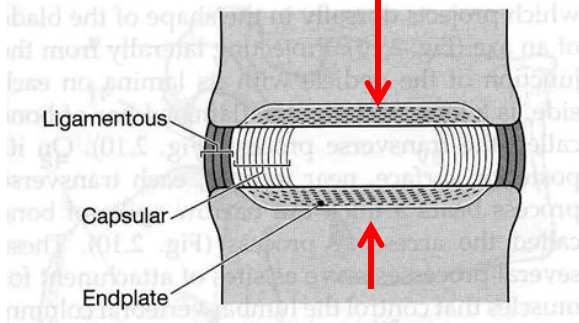
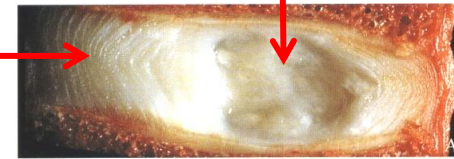
Mr Kalyan's - Education Tool - To Enhance The Understanding

SPINE - ANATOMY



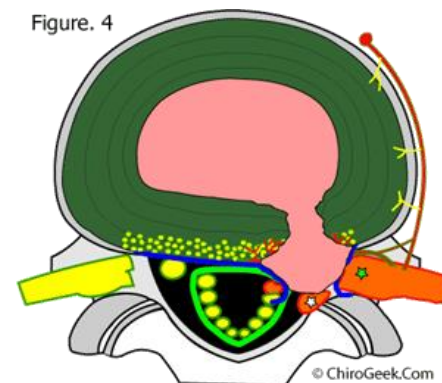
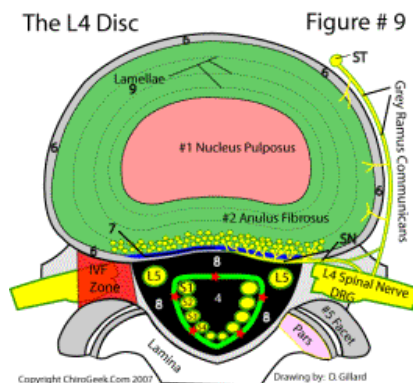
Intervertebral Disc - Anatomy

- Inner gelatinous material - **Nucleus Pulposus**
- Outer **Annulus fibrosus**
- Cartilaginous **Endplate**



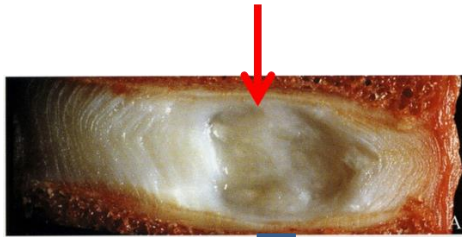
What is Slipped Disc? (Prolapsed or Herniated Disc)

- When you have a 'slipped' (prolapsed) disc, a disc does not actually slip.
 - A prolapsed disc is sometimes called a herniated disc.
-
- What happens is that
 - part of the inner softer part of the disc (the nucleus pulposus) bulges out (herniates) through a weakness in the outer part of the disc (the Annulus).
 - The bulging disc may press on nearby structures
 - such as a nerve coming from the spinal cord.

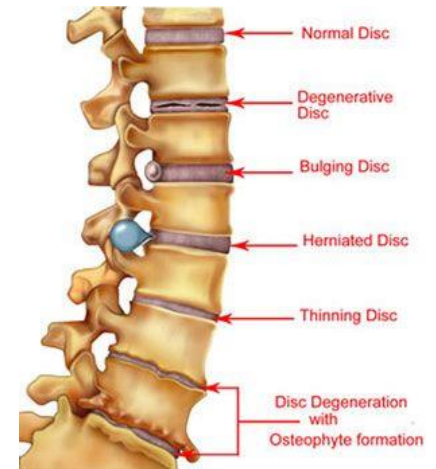
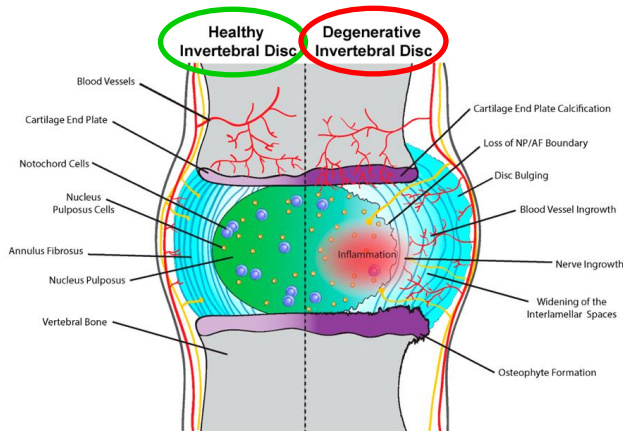
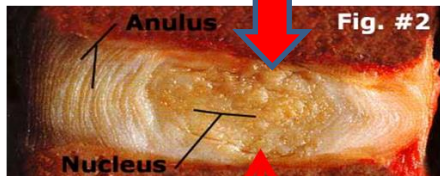




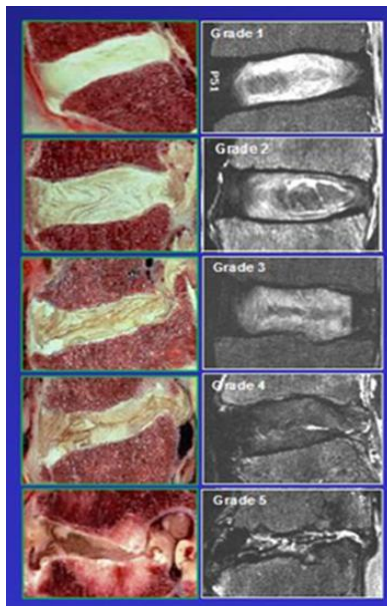
Disc Degeneration - Illustrations



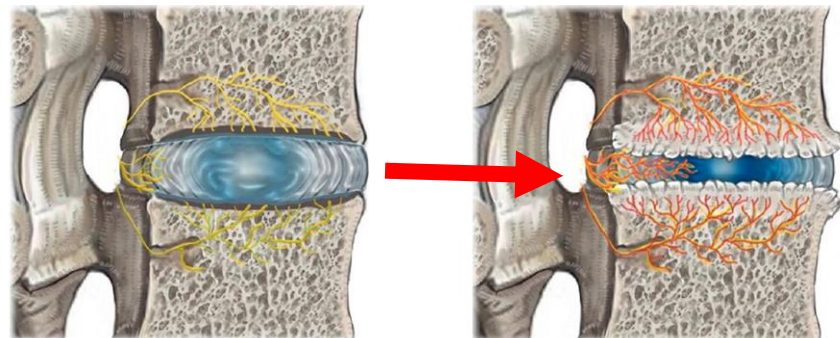
Hardening of Disc with Ageing & Wear



Illustrations of Increasing Disc Degeneration



Type of Innervation - ? Changes from Pressure sensor to Pain sensor



Disc Prolapse / Slip / Herniations Stages / Severity - Illustrations

Four stages to a disc herniation

Degeneration



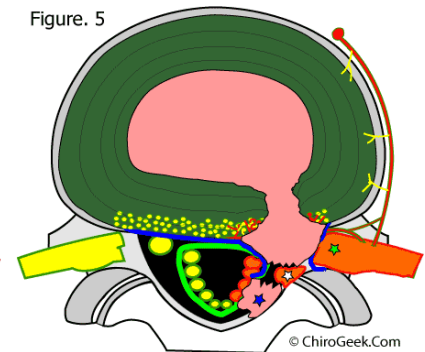
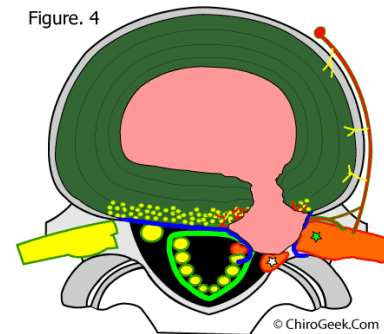
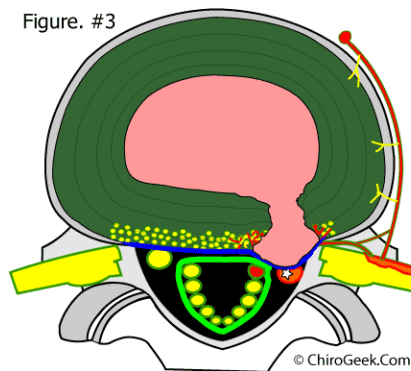
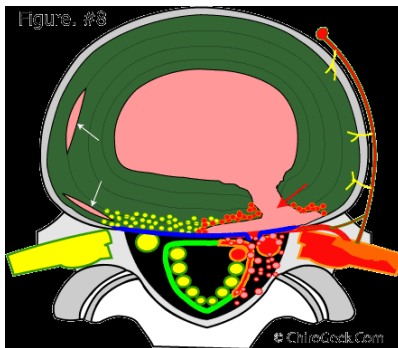
Prolapse



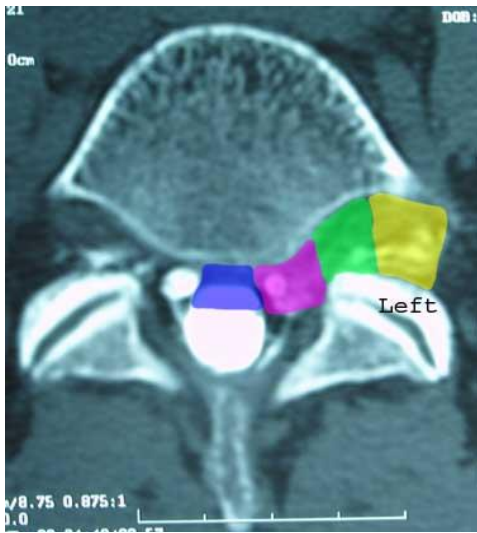
Extrusion



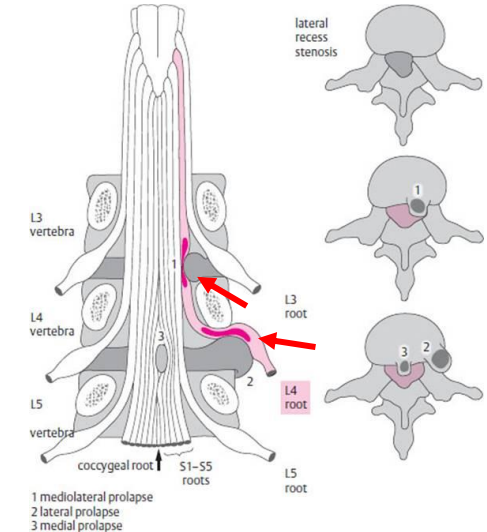
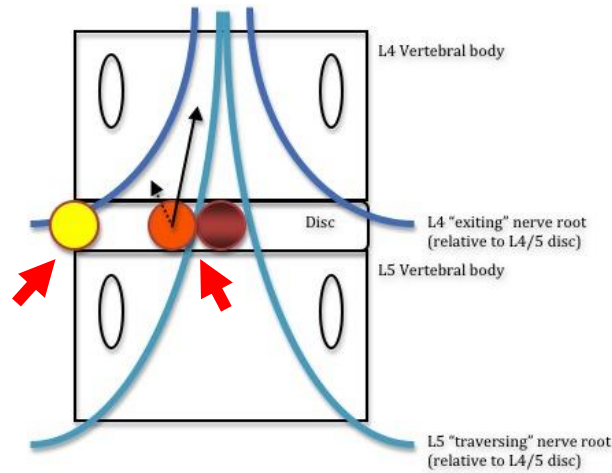
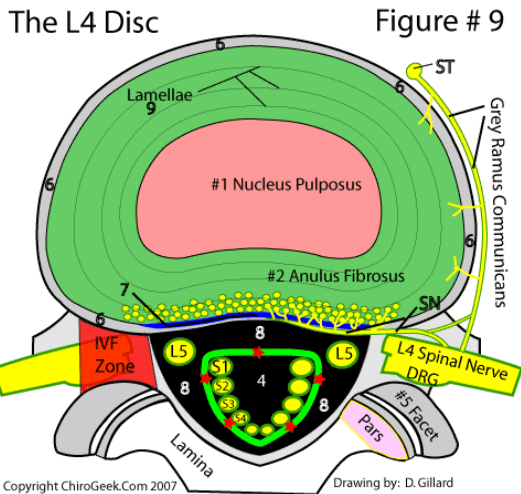
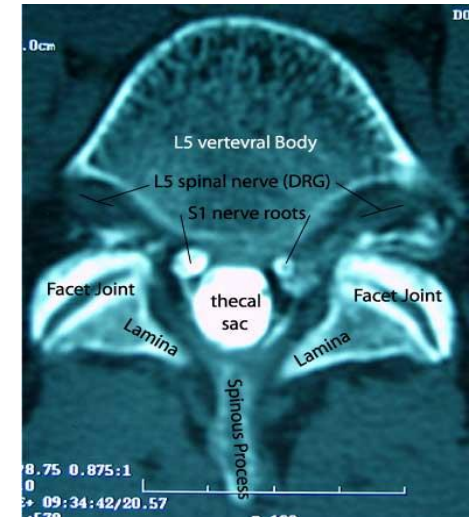
Sequestration



Disc Prolapse – Types / Location



- Central
- Posterolateral
- Foraminal
- Far Lateral



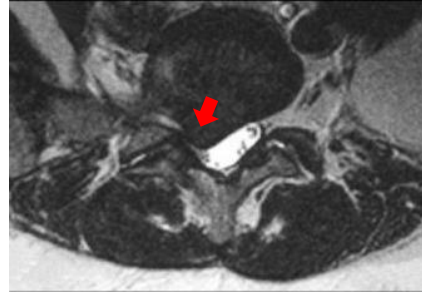
Disc Prolapse – Trapping of the Nerves

Example of Disc Prolapse – by Locations

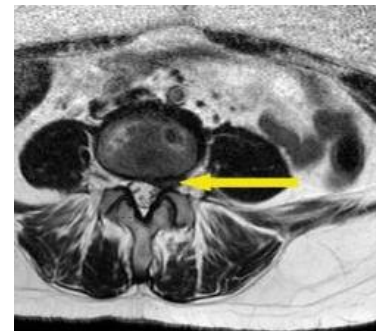
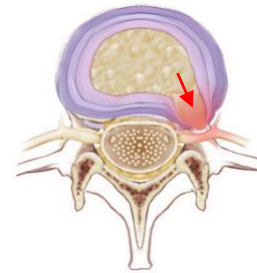
Central



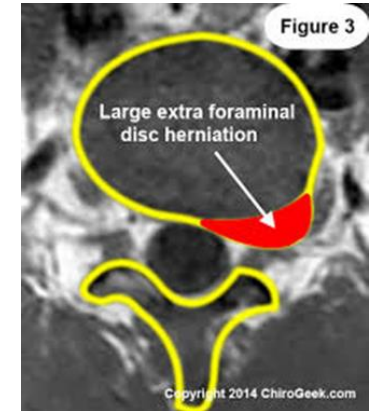
Lateral Recess



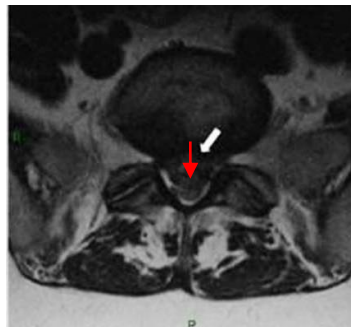
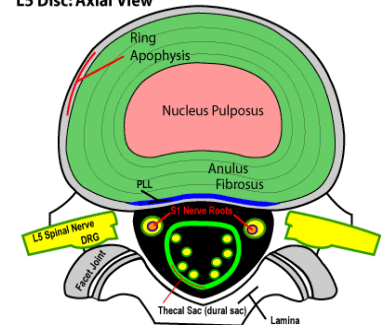
Foraminal



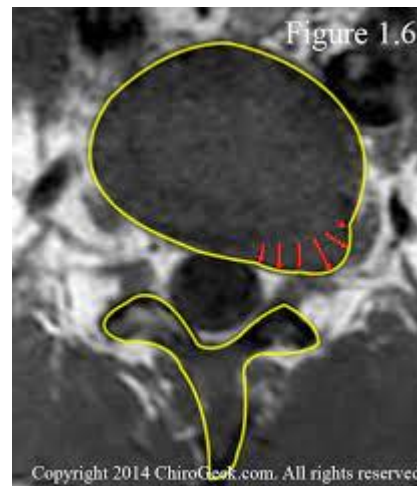
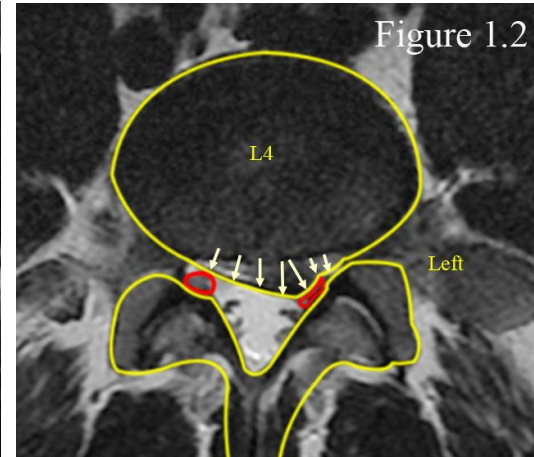
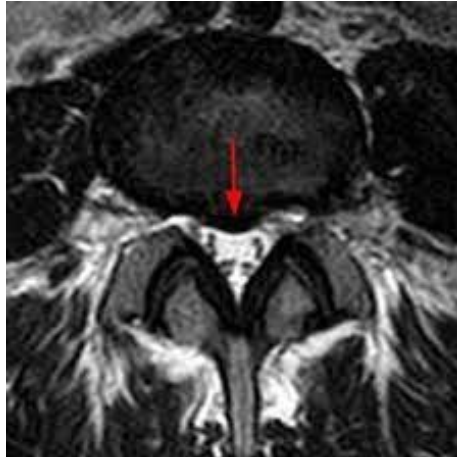
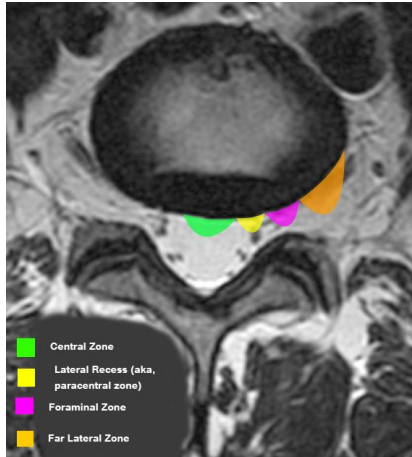
Extra- Foraminal



L5 Disc: Axial View



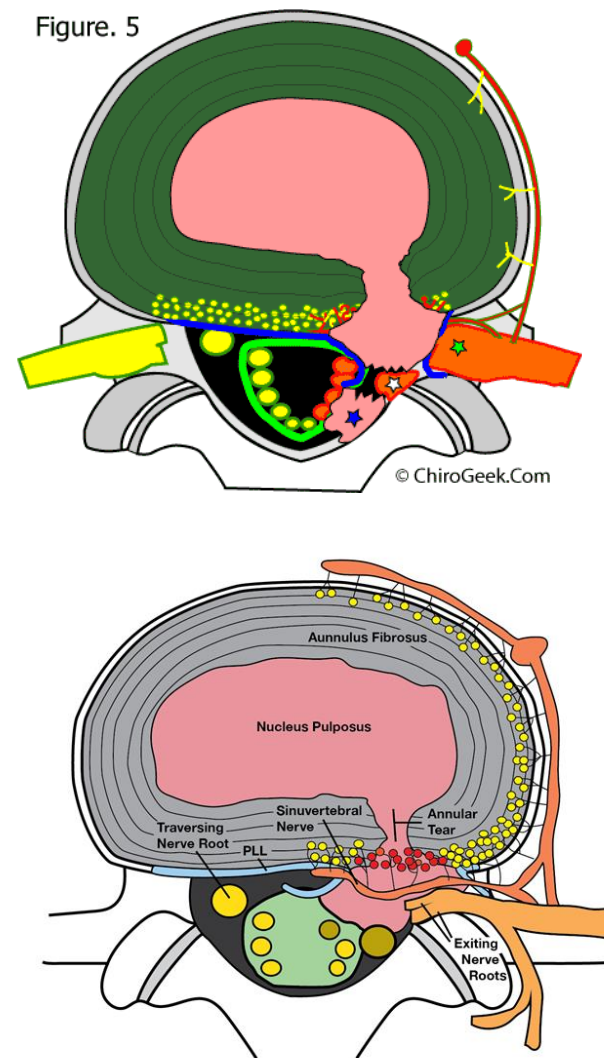
MRI - Cross Section Pictures - Different Kind of Disc Prolapse



Different components that could cause pain symptoms in Disc Prolapse / Herniations

- **Mechanical**
 - Physical compression of the nerve
- **Chemical**
 - Leakage of inflammatory chemical causing nerve swelling and irritation
- **Inflammatory**
- **Immunogenic**
 - Immune system trying to eat away the extruded disc material
- **Ischemic**
 - Compression of the blood vessels resulting reducing the blood flow to the nerve

Figure. 5



Disc Prolapse - Symptoms & Signs

History

- Onset of Back & Leg Pain
- Traumatic event presides (few)
- Intermittent episode of symptoms before for few months
- Activities Exacerbate symptoms
- Straining, Sneezing, Coughing & Sitting (Exacerbate)

History

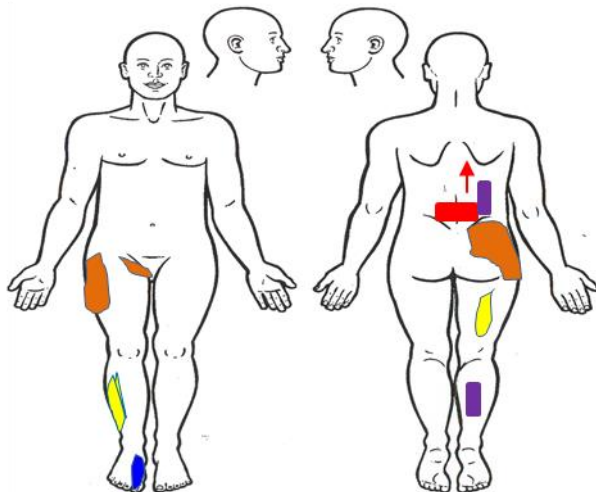
- Pain start in Lumbar area radiate to SI joint / Buttock
- Radicular pain (Leg > Back)
- Referred pain (Aching)
- Radiculopathy
 - Numbness
 - Weakness
 - Bladder & Bowel

Examination

- Limping Gait
- List (Sciatic Scoliosis)
- Range of Motion reduced, Aggravate Pain
- Neurological Assessment
 - Sensory
 - Motor
 - Reflex
- Hip & Knee Joint Assessment
- Peripheral Pulses
- Rectal Examination (if Required)

Nerve root Tension Signs

- Positive provocative tests
 - **Straight leg raise** (L4, L5, S1, S2)
 - **Femoral Stretch** / Prone Knee bend (L2, L3, L4)
- Lumbar extension & Ipsilateral side flexion
 - may exacerbate radicular pain (Kemp sign)



Possible Types of Pain in Disc Prolapse

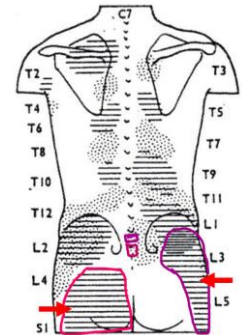
Local Pain

located at the level of the pathology



Referred Pain

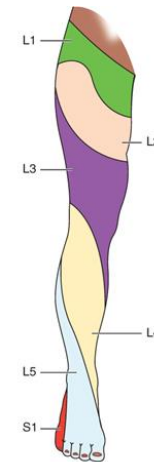
located at the area that shares a common embryological origin with the region involved
“Sclerotomal pain”



Radicular Pain

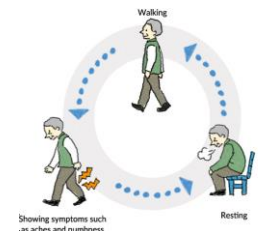
Dermatomal pain - located along the dermatomal distribution of a spinal nerve root (sensory fibres)

Dynatomal pain - an area in which pain is felt when a given spinal nerve is irritated.



Claudication Pain (Neurogenic)

Progressive onset of pain, heaviness, numbness, cramping, tingling & weakness in the low back, buttocks & legs - *which is initiated by standing, walking or lumbar extension.*

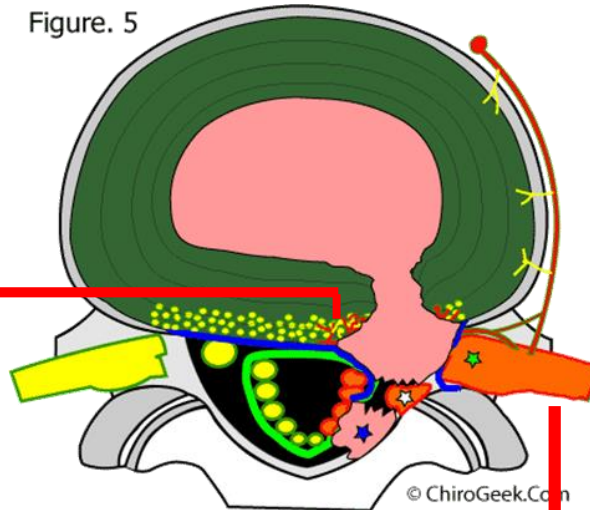


Nerve Pain in Disc prolapse

Figure. 5

Somatic Pain

Neuropathic Pain



Inflamed Nerve
Is Like
Irritated Mad dog

“Nerve Pain” can be
Excruciating
Agonising
Unbearable
Distressing

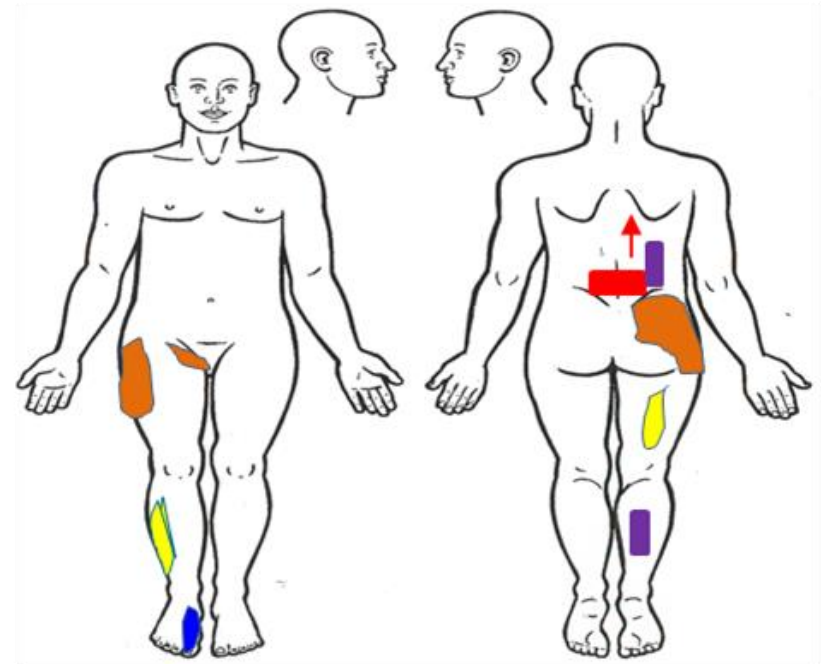


Different Type of pain & their Distributions

RADICULAR VS. REFERRED PAIN

RADICULAR	REFERRED
Leg worse than back pain	Back pain worse than leg pain
Neuro descriptors	Poorly localised
+ve SLR	Dull ache
Below knee	-ve SLR
Loss of function	
Well localised	
Shooting	
Dermatomal	
COULD IT BE BOTH?	

Radicular vs Referred Pain



Spinal Shift - To side + / - forward

In spine shift, the body is actively trying to avoid irritation or compression of a spinal nerve root through different mechanisms



Disc Prolapse – Mr Kalyan's Management principles



Mr Kalyan's Keystone for Successful Management is - "PATIENT EDUCATION"

- Improving the Understanding of the Pathology & the reasons for the pain
- To understand both the static & Dynamic elements of their condition.
- How to avoid further damage / irritations / recurrence
- How to enable faster & better Healing
- To understand the Natural progression & Potential Outcomes
- Understanding your front & sidewise balances & their effects
- How to achieve Long-term better Outcome?

Using Information sheet, Illustrations & Bone Models

- Understanding the Pain mechanisms & essential concepts behind pain
- Improving the knowledge about
 - Different Pain relief strategies &
 - Action & Usage of different Medications

Using Information sheet, Illustrations & Bone Models

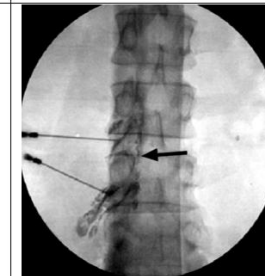
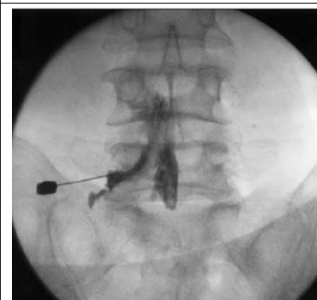
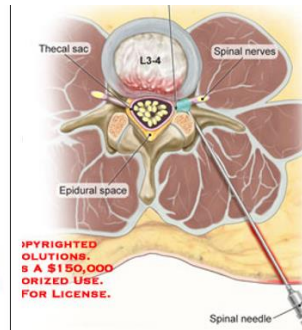
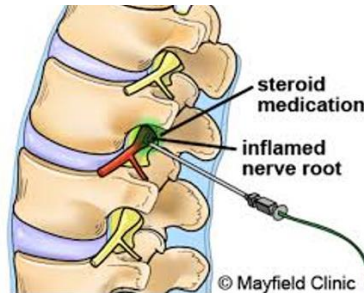
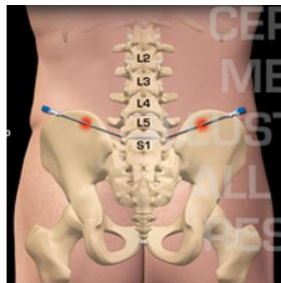
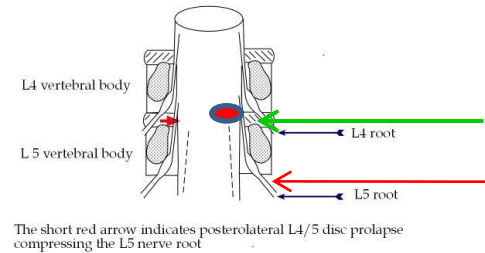
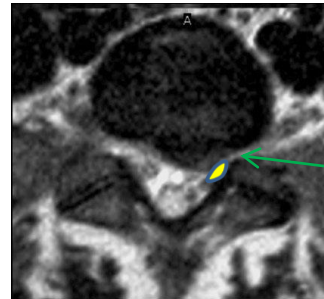
- **Activity Modifications** (Personalised) & Guidance on Graded activity
- **Postural Modifications** (Personalised)
- **Exercise Modifications** (tailored)
- **Better Self Managements** (tailored)
- **Appropriate Reassurances** (tailored)
- **Return-to-work programmes** (Personalised)
- **Manual Therapy** - Physio / Osteo / Chiropractor

- **Spinal Injections** (10% to 20%)
(use tailored specialised techniques)
 - **Epidural (Foraminal)**
 - **Nerve root block**
 - **Medial Branch Block / Rhizolysis** (for associated Face joint arthritis - occasionally)

- **Surgery** (< 5%)
(use tailored Specialised techniques)
 - **Decompression + Partial Discectomy +/- Undercutting facetectomy**
 - **Decompression & Fusion (PLIF/TLIF)** – Very rarely required

Spinal Injections with Steroid & Local anaesthesia

Epidural Injection - Transforaminal / Nerve Root Block



Injection done under Image Guidance using Specialised X-ray Machine

Surgery – Decompression & Partial Discectomy - Principle

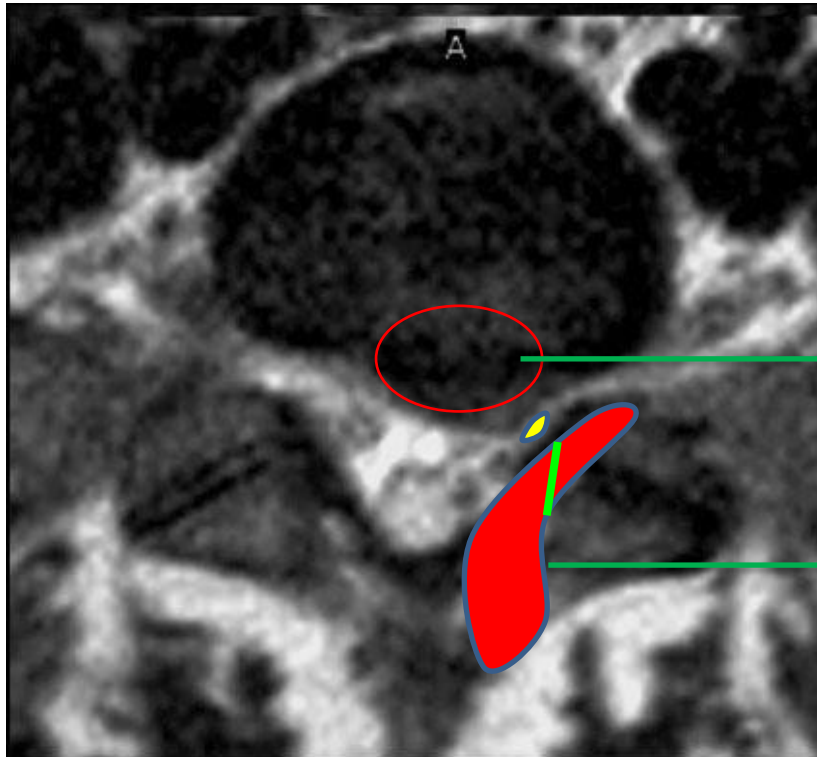
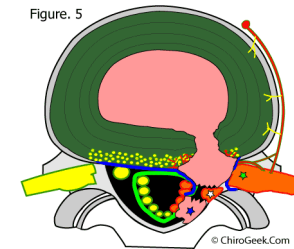
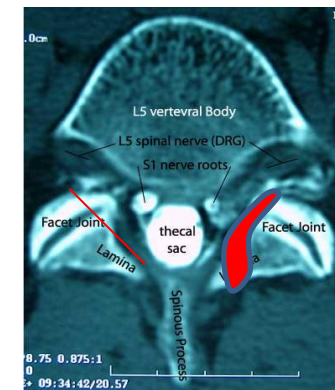


Figure. 5

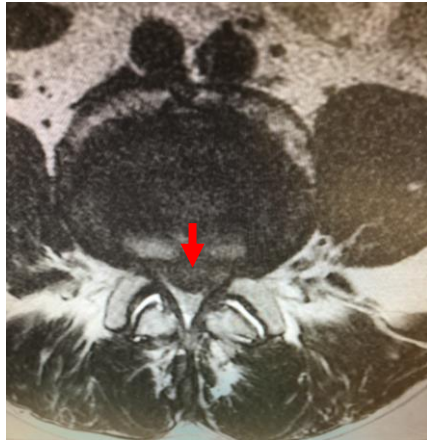


Shaving of the
Disc Protrusion
+ the lamina
bone +/- inside
border of facet
joint



Surgery – Pre & Post Surgery MRI pictures

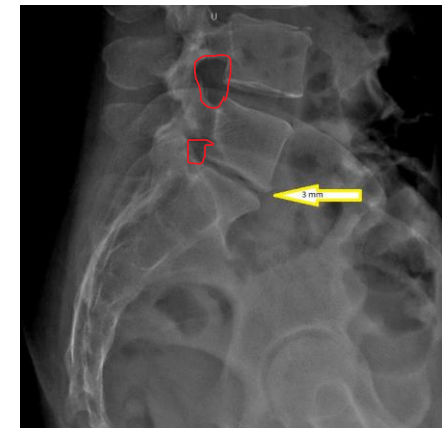
Pre Surgery



Post Surgery




Shaving of the
Disc Protrusion
+/- the lamina
bone / inside
border of facets
joint



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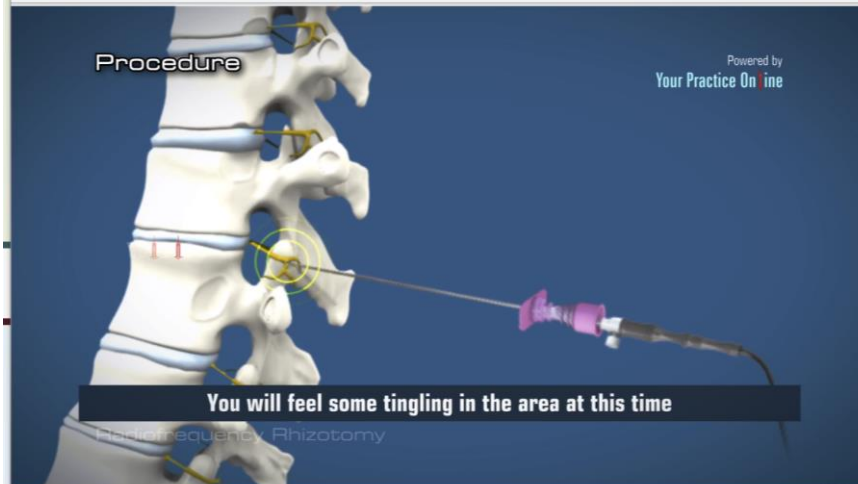
Celebrate Freedom from Pain Medication
Live Life Again

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Rhizotomy - Your Practice Online - Google Chrome

ypo.education/c-MTY2MDg4My4y/neurology/rhizotomy-t142/video/?embed=1&autorun=1



Procedure


Powered by
Your Practice Online

You will feel some tingling in the area at this time

Harmonicity Rhizotomy

Raman Kalyan

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- Spine Anatomy

Spinal Conditions

- Disc Herniation
- Spinal Stenosis
- Radiculopathy
- Spondylolisthesis
- Cervical Radiculopathy and Myelopathy
- Degenerative Disc Disease
- Neck Pain
- Spondylosis
- Spondylo Arthritis
- Scoliosis

Spinal Interventions

- Transforaminal Epidural Injection
- Medial Branch Block Injection
- Rhizolysis of the Facet Joints
- Facet Joint Injection
- Cervical Spine Injection

Spinal Surgery

- Spinal Stenosis Surgery
- Artificial Cervical Disc Replacement
- Minimally Invasive Pedicle Screw Instrumentation
- Lateral Lumbar Interbody Fusion
- Vertebroplasty
- Anterior Cervical Discectomy with Fusion
- Posterior Lumbar Fusion
- Minimally Invasive TLIF
- Kyphoplasty
- Scoliosis Surgery

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[Spinal Conditions & Treatment](#) [Spinal Injections & Interventions](#)

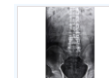
Anatomy of the Spine



Spine Basic

- [American Academy of Orthopaedic Surgeon \(Spine Basic link\)](#)

Investigations



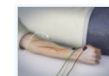
Radiological Assessment for Spinal Disorders

- [North American Spine Society, Know Your Back - Radiological Assessment for Spinal Disorders](#)



MRI - Magnetic Resonance Imaging

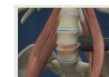
- [North American Spine Society - MRI](#)



Specialized Nerve Tests: EMG, NCV

- [North American Spine Society, Know Your Back - EMG & NCS - Nerve test](#)
- [American Academy of Orthopaedic Surgeon, NCS & EMG - Electromyography testing](#)

Spinal Conditions & Treatment



Lumbar Disc Prolapse & Discectomy Surgery

- [British Association of Spine Surgeons Leaflet](#)
- [American Association of Neurosurgeon](#)
- [North American Spine Society](#)
- [North American Spine Society](#)
 - [Open Discectomy](#)
 - [Lumbar \(Open\) Microscopic Discectomy](#)
- [Eurospine Patientline](#)
- [American Academy of Orthopaedic Surgeon](#)



Lumbar Spinal Stenosis & Laminectomy Surgery

- [British Association of Spine Surgeons Leaflet](#)
- [North American Spine Society, Know Your Back - Lumbar Spinal Stenosis](#)
- [Eurospine Patientline - Lumbar Spinal Stenosis & Treatment](#)

Herniated Lumbar Disc

North American Spine Society
Public Education Series

BASS
British Association of Spine Surgeons

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