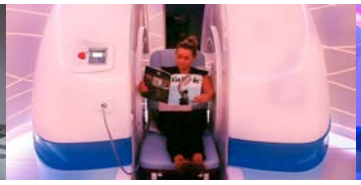
The GOOD 1

BASICS

- Types

Standard Supine

1.5 – 3 Tesla



Open Supine

0.6 – 1 Tesla

Weight/Dynamic

0.6 – 1 Tesla

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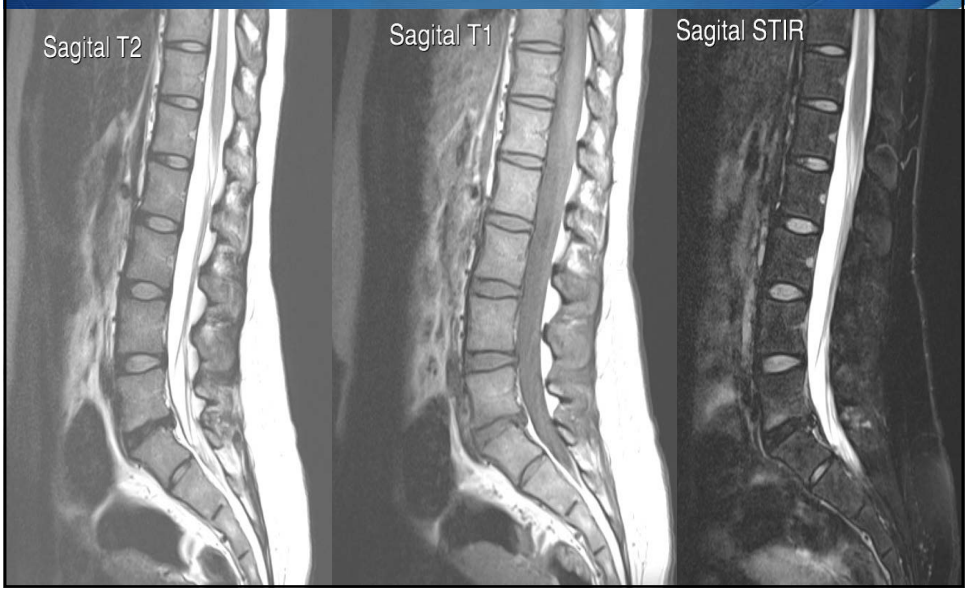
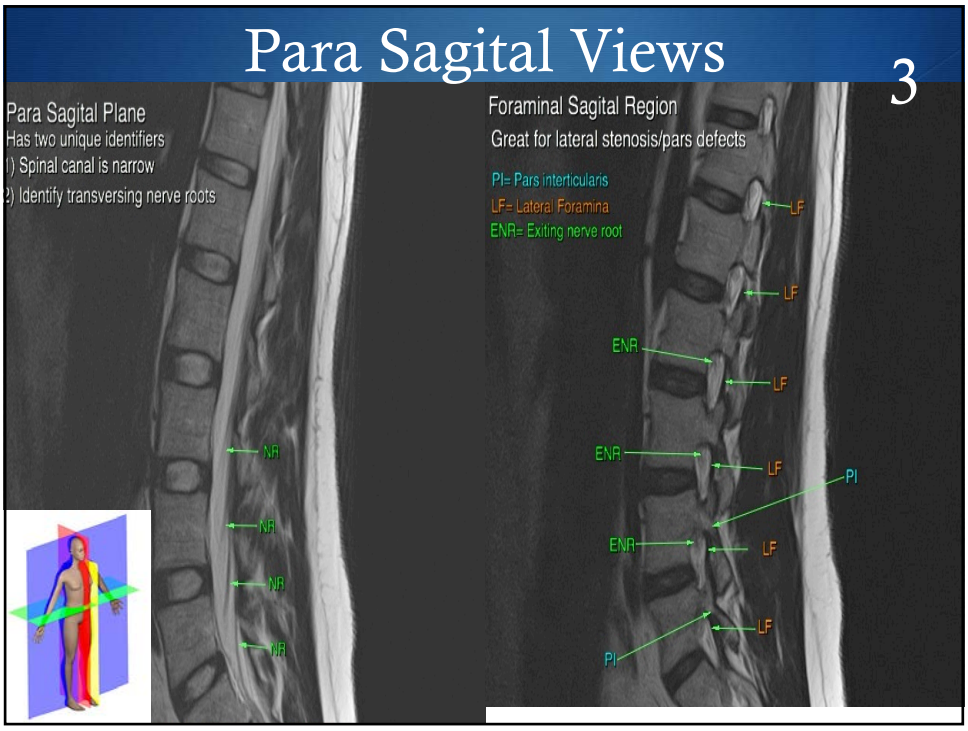
1

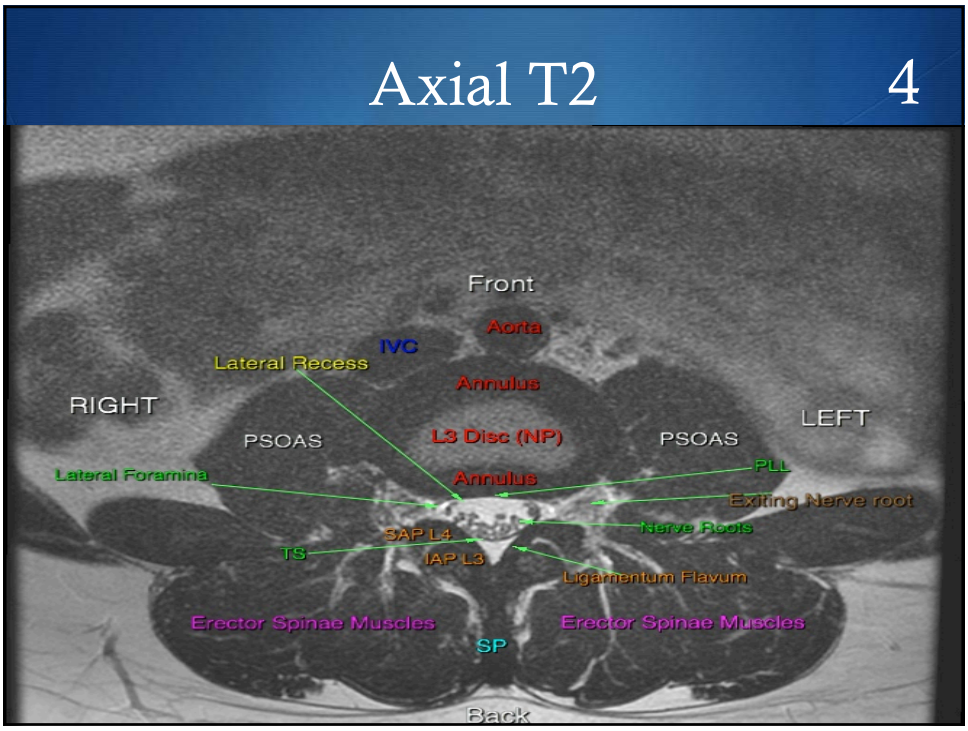
Sequences T2, T1 & STIR 2



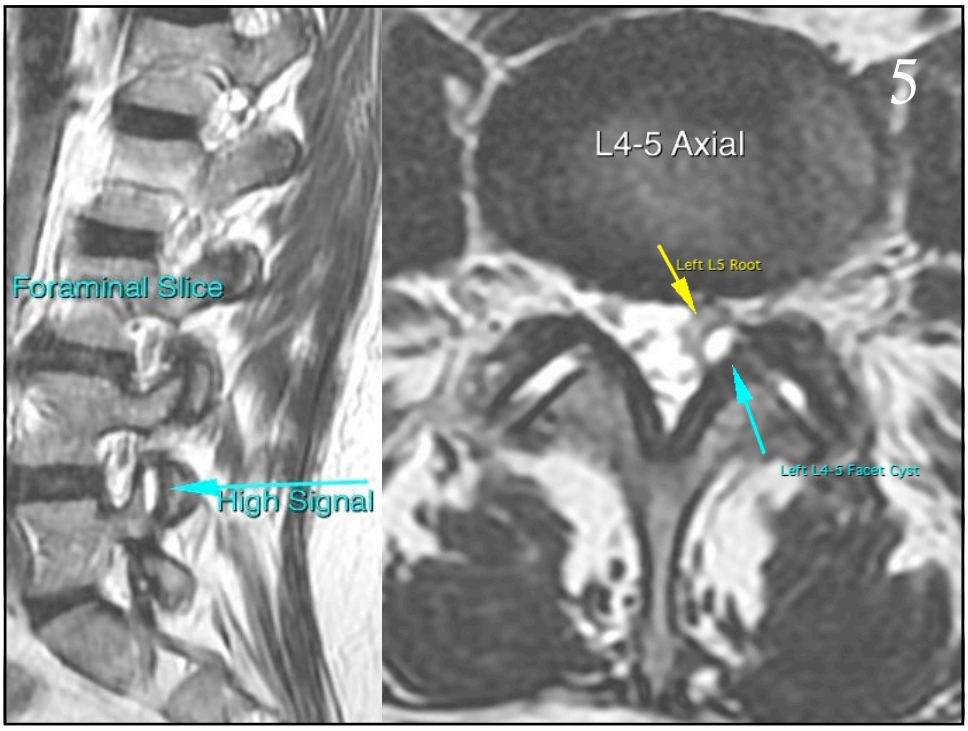
2


Para Sagital Views
3
Para Sagital Plane
Has two unique identifiers
1) Spinal canal is narrow
2) Identify transversing nerve roots
NR
NR
NR
NR
Foraminal Sagital Region
Great for lateral stenosis/pars defects
PI= Pars interticularis
LF= Lateral Foramina
ENR= Exiting nerve root
LF
LF
ENR
LF
ENR
LF
PI
ENR
LF
LF
PI

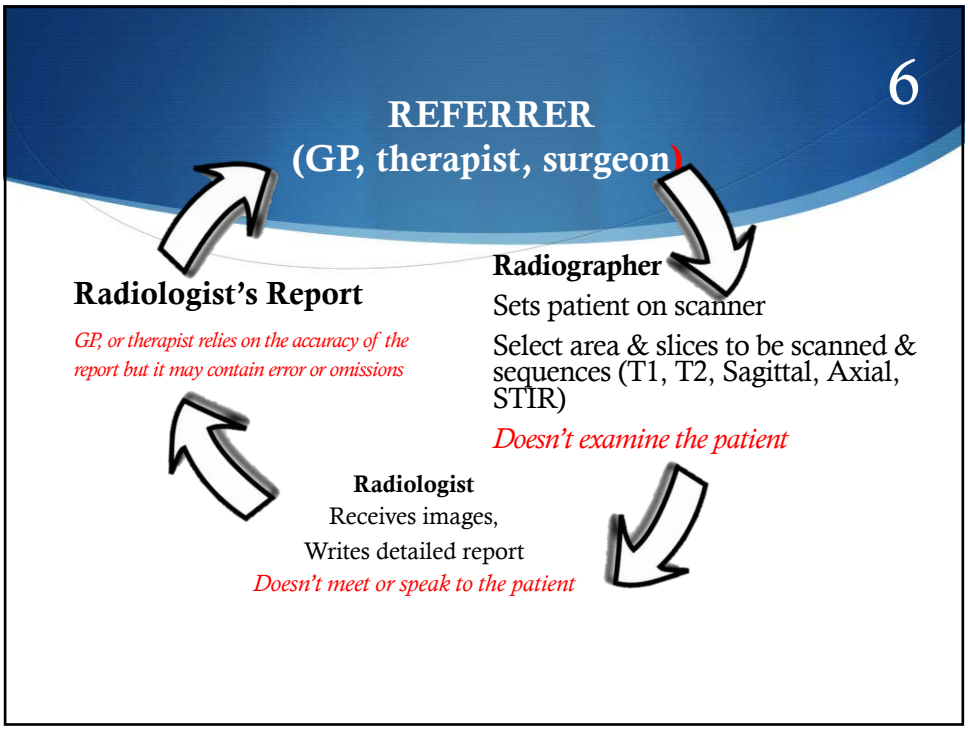
3


Axial T2
4
Front
Aorta
IVC
Lateral Recess
Annulus
RIGHT
LEFT
PSOAS
L3 Disc (NP)
PSOAS
Lateral Foramina
Annulus
PLL
Exiting Nerve root
Nerve Roots
SAP L4
TS
IAP L3
Ligamentum Flavum
Erector Spinae Muscles
Erector Spinae Muscles
SP
Back

4


5
L4-5 Axial
Left L5 Root
Left L4-5 Facet Cyst
Foraminal Slice
High Signal

5


6
REFERRER
(GP, therapist, surgeon)
Radiologist's Report
GP, or therapist relies on the accuracy of the report but it may contain error or omissions
Radiographer
Sets patient on scanner
Select area & slices to be scanned & sequences (T1, T2, Sagittal, Axial, STIR)
Doesn't examine the patient
Radiologist
Receives images,
Writes detailed report
Doesn't meet or speak to the patient

6

- 29yoa - Male Left LB, buttock Pain & numbness S1 dermatome.
- 2/12 - Playing football instant pain & numbness, not improving.
- Saw a therapist who diagnosed Piriformis Syndrome. 8 treatments later no improvement.

7

History of Injury while playing football with left L5-S1 numbness. Straight-leg raise is positive on the left side.
Magnetic resonance examination of the lumbar spine has been performed. Satisfactory of the lumbar vertebra is noted.
Bright T2 signal intensity is seen at the posterior annular margins of L1-L2, L2-3, L4-5 and L5-S1 discs. There is no posterior disc protrusion present.
No spinal canal stenosis is noted.
No nerve root compression is identified.
There is no muscular oedema present.
No pars fractures of L5 are noted.
No vertebral oedema is seen.
Interspinous process space in the lumbar spine does not show any excessive fluid or oedema. At L5-S1 segment, a left paracentral posterior annular tear is noted. Please see axial sequence image #24 and sagittal STIR sequence image #10. Brightness of the posterior annular T2 signal intensity focus mentioned earlier is not prominent enough and I suspect that this represents normal finding rather than representing annular tears.

Conclusion:
Evidence of left paracentral annular tear at L5-S1.
No nerve root compression or spinal canal stenosis is present. No vertebral fractures are identified.

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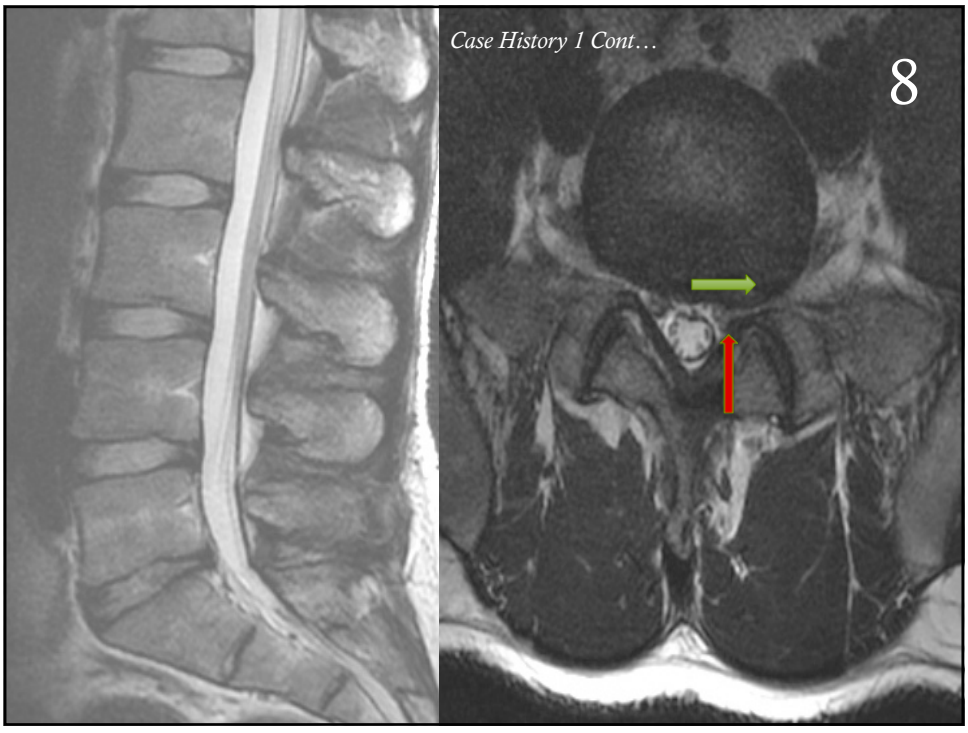
7



8

Case History 1 Cont…

9

Conclusion:
Evidence of left paracentral annular tear at L5-S1.
No nerve root compression or spinal canal stenosis is present. No vertebral fractures are identified.

Addendum

I have discussed with Mr Chandler about the clinical picture of Mr Robbins.
Once again I have reviewed the images.
I agree with Mr Chandler's observation that there is deformity of the left S1 nerve root in the left lateral recess. This is being caused by a combination of a left paracentral disc protrusion and left facet joint hypertrophy.

9

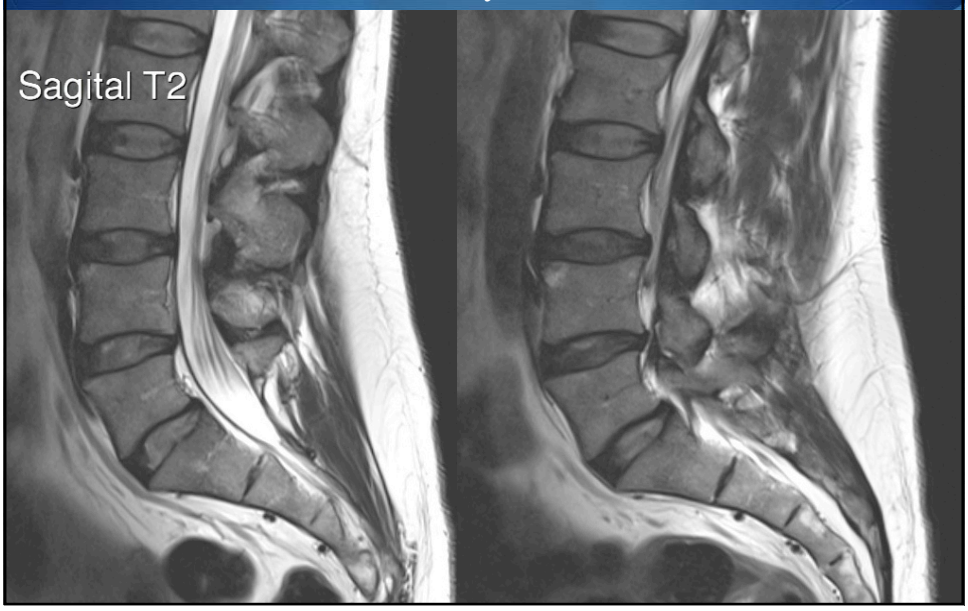
Case History 2

10

- 44yoa male.
- Suffered LB pain, since 8yoa. Onset of buttock pain 10 years & 3 years onset right L5 radiculopathy. Pain is worse on Standing and Walking, complete relief on LSP flexion. **Totally had enough!!!!!**
- **Osteopath** – Performed internal coccyx adjustment
- **Physiotherapist** Suspected piriformis syndrome
- **Chiropractor** Suspected SI torsion combined with piriformis.

10

Case History 2 Cont… 11



11

Case History 2 12

Findings

There are subtle anterior endplate corner marrow signal changes, most prominent in the superior endplate of L4, raising the suggestion of enthesopathy and inflammatory arthritis. There is otherwise normal marrow signal elsewhere and no significant disc disease.
The central canal is capacious with normal signal in the distal cord. There are no pars defects.
There is no nerve root impingement.

Impression

There are subtle endplate corner marrow signal changes raising the possibility of inflammatory arthritis. Correlation with HLA B27 status and inflammatory markers would be advised as well as consideration for the MRI of the sacroiliac joints.

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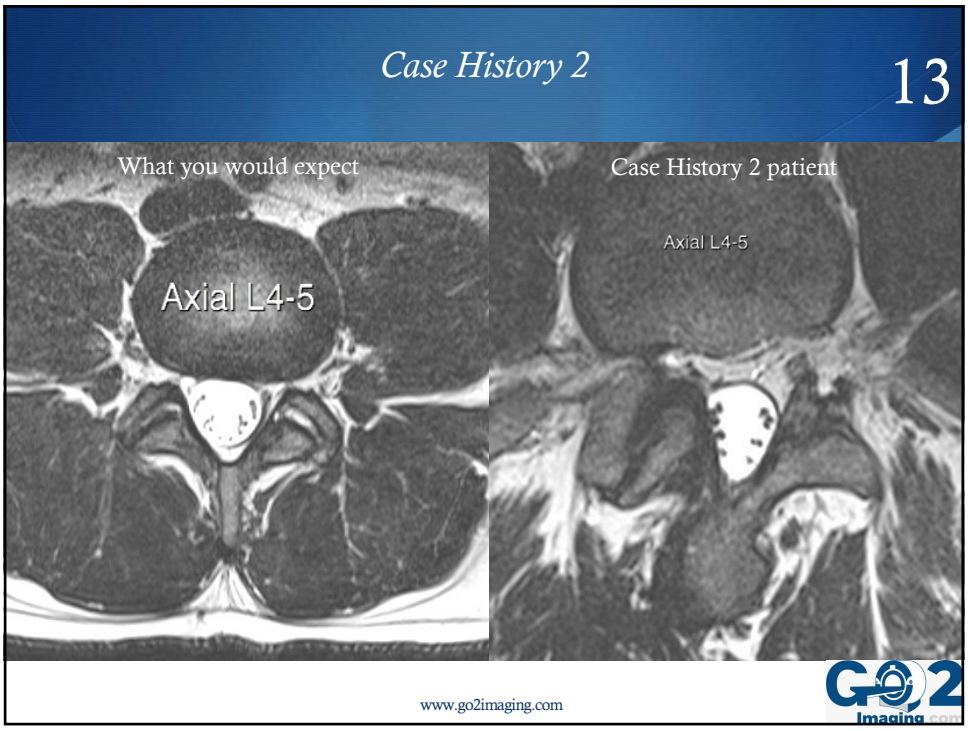
12


Case History 2
13
What you would expect
Axial L4-5
Case History 2 patient
Axial L4-5
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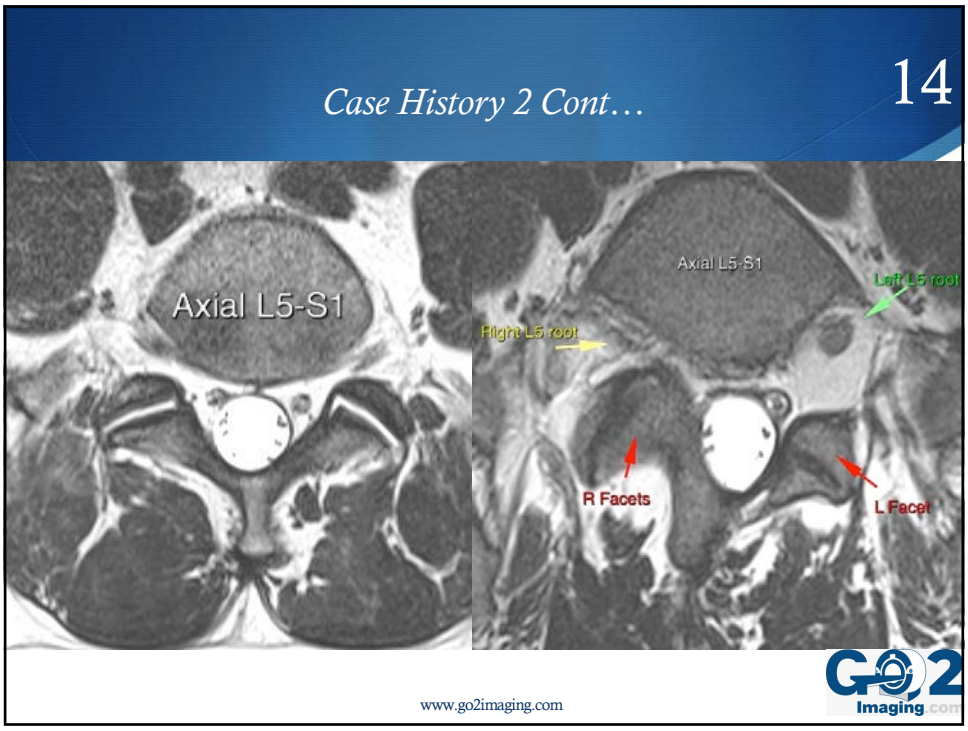
13


Case History 2 Cont…
14
Axial L5-S1
Axial L5-S1
Left L5 root
Right L5 root
R Facets
L Facet
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14

Case History 2 Cont…

15

ADDENDUM

After speaking to Mr Chandler I have reviewed the axial images again.
On the axial sequences, there is deformity of the L5 spinous process, which is expanded and has appearances of incomplete bony fusion, which is likely to be developmental in origin. This would be better evaluated on CT. There is reduced interspinous space between the L4 and L5 spinous processes raising suspicion of "kissing spines" although there is no significant soft tissue inflammatory change in this area.

There is bilateral degenerative hypertrophy in the L4-5 facet joints bilaterally with a small right facet joint effusion causing impingement of the right L5 nerve root.

These appearances more likely to represent the cause of the patient's mechanical Symptoms.
Electronically signed by: Dr…

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Case History 3

16

- 37 yoa fall on to lower back whilst drunk.
- Onset 6/12 – Constant ache CLB, Tenderness, ache in to upper buttocks.
- Seen 1 therapist, diagnosed torsion of the pelvis affecting QL/muscular fatigue.

Findings:

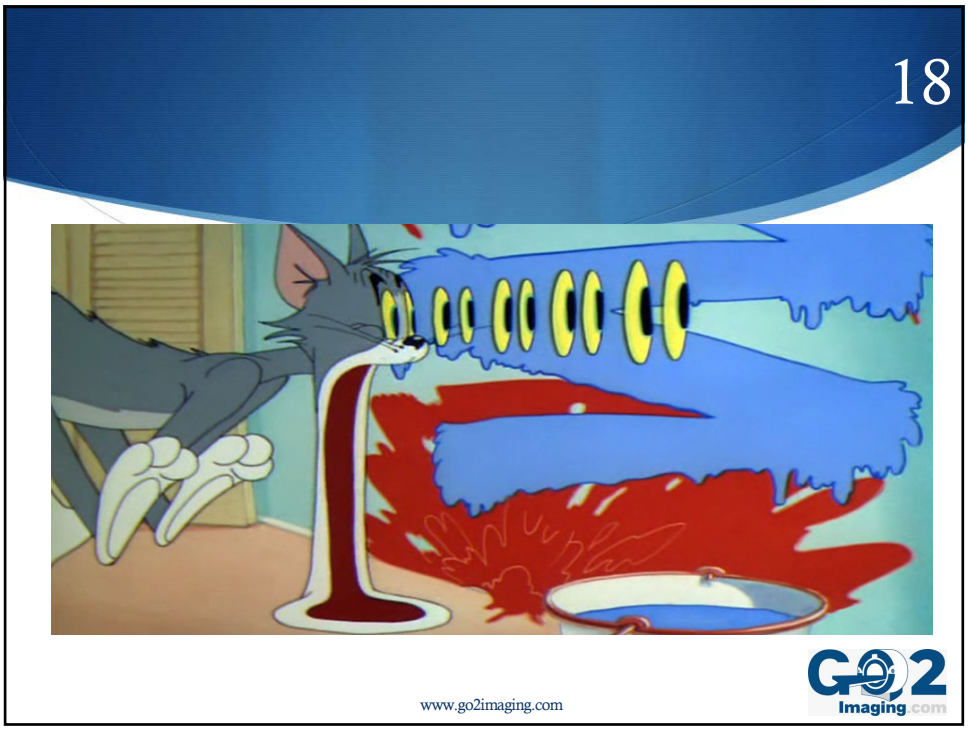
Satisfactory alignment of lumbar vertebrae is seen.
The intervertebral discs are of satisfactory heights and signal intensity.
There is no vertebral oedema present. Normal spinal canal dimensions.
There are no pars fractures of L5.
Normal level of spinal cord termination. No features of spinal dysraphism.
Normal retroperitoneum.
Lumbosacral junction is of conventional morphology.

Conclusion:
MR examination of lumbar spine is within normal limits.

16


Case History 3
17
T2
T1
STIR
3232
1409
-414
T FOR MEDICAL USAGE

17


18
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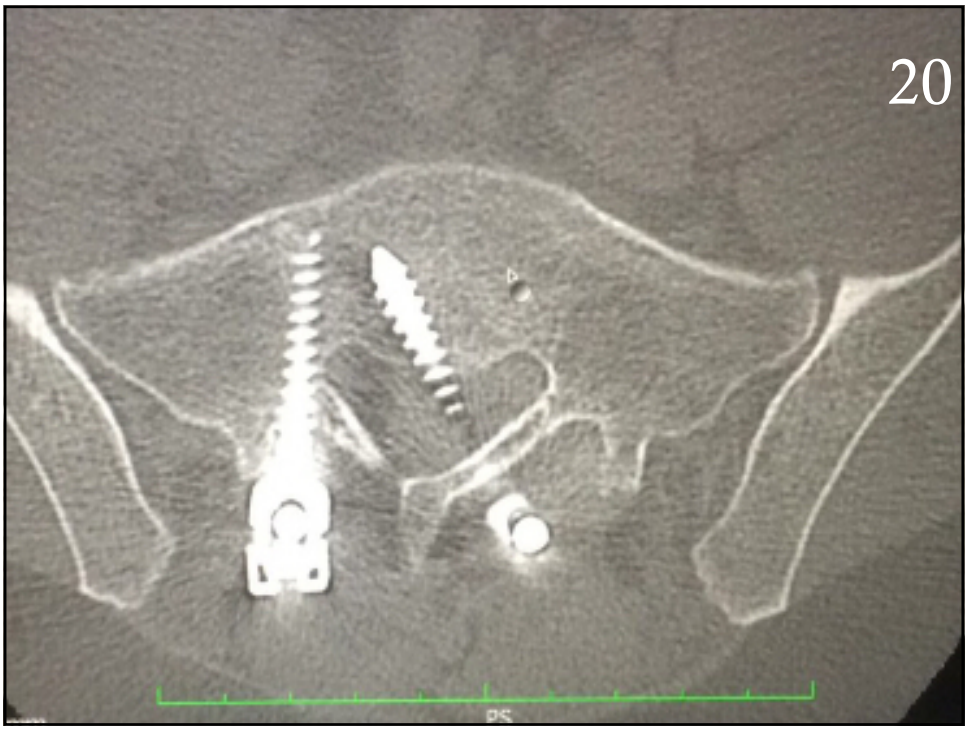
GO2
Imaging.com

18

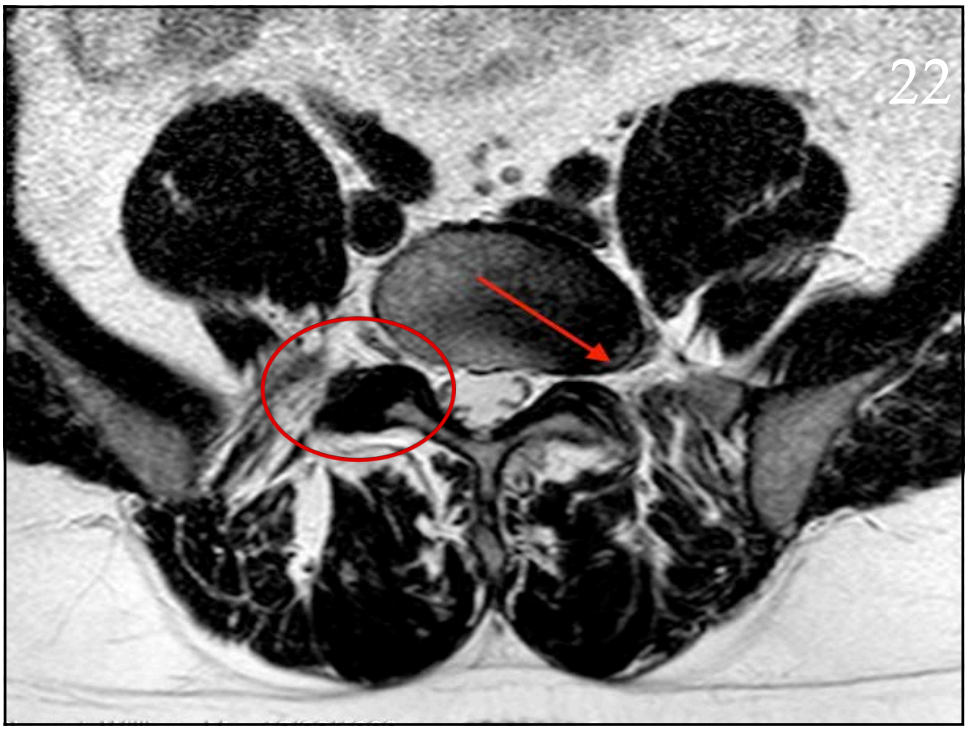

Case History 4
55yoa – Bilateral S1 Numbness & Left sided groin ache
19

19

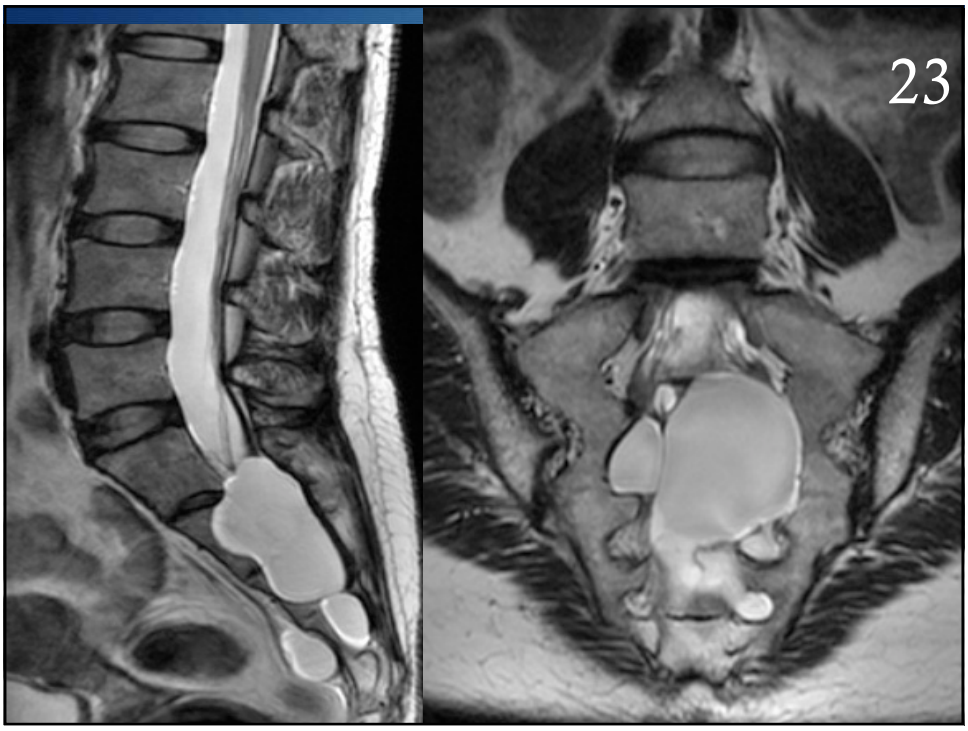

20

20

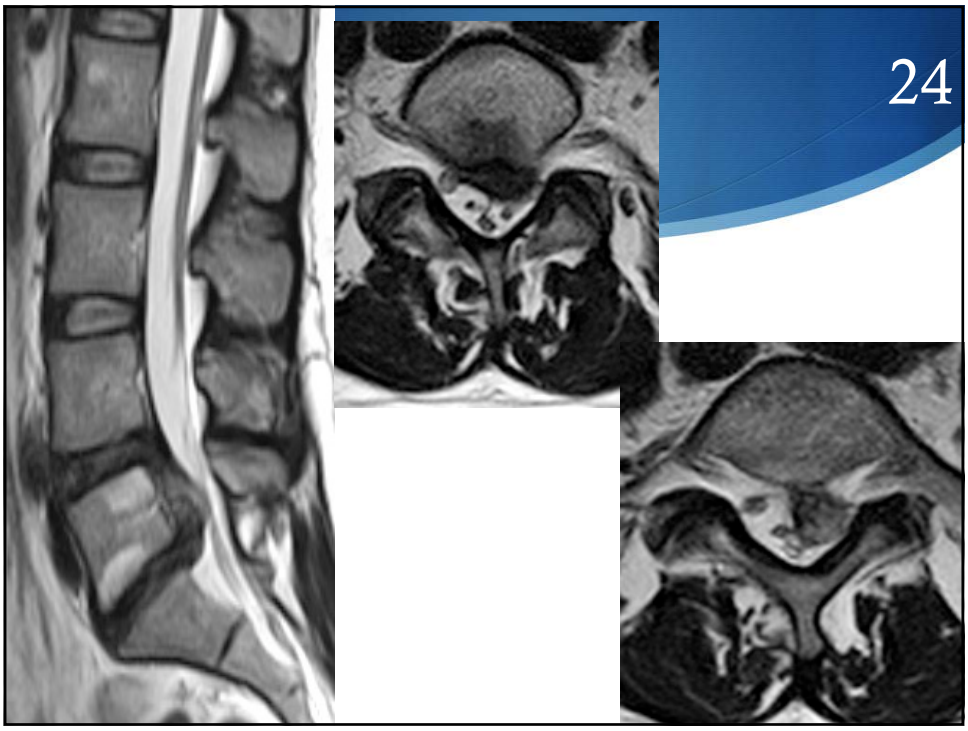
21



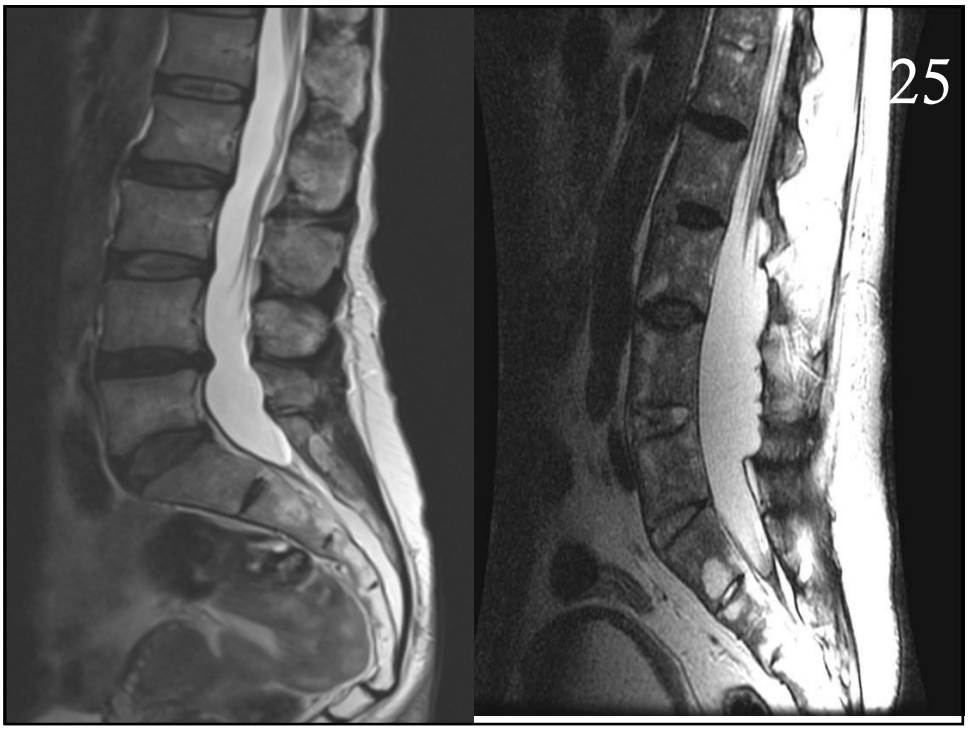
22



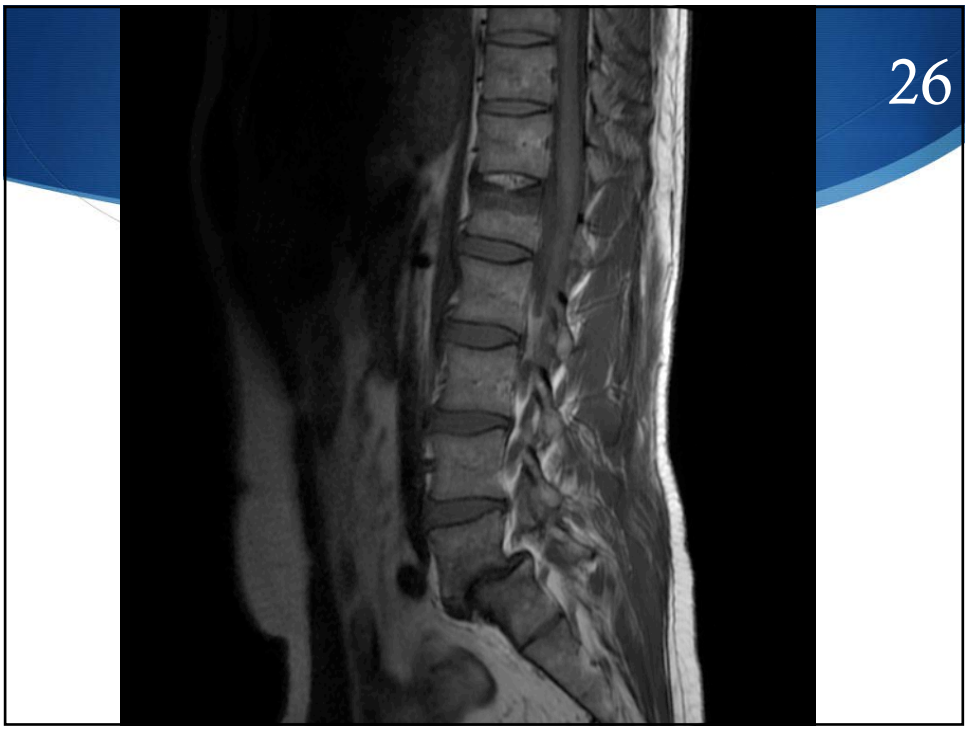
23



24



25



26

The End

27

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Does Spinal Pathology Correlate Back Pain Disorders?

"…Degeneration and prolapse can be seen in a high proportion of people who have never suffered from significant back pain. ((Boos, Reider, Schade et al, 1995 etc). This has lead to a greater understanding of **psychosocial** influences."

Michael Adams Senior Research Fellow, Patricia Dolan Senior Lecturer Dept of Anatomy University of Bristol

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Does Spinal Pathology Correlate with Back Pain Disorders?

Michael Adams Senior Research Fellow, Patricia Dolan Senior Lecturer Dept of Anatomy University of Bristol **Cont'd…**

(BUT) ….this has also encouraged some investigators to denigrate the importance of tissue changes in the generation of back pain itself, and this is a **mistake.**

The MRI studies just cited (Boos et al) also showed that certain feature e.g. disc degeneration, herniation or radial fissure are MORE COMMON in those with back pain. Viderman, Leppavuori, Kaprio et al, 1998, showed that the risk of severe back pain **increased by 120% - 460% if MRI scans revealed evidence of structure changes** in discs, such as narrowing and annular tears, especially when those changes are associated with increased exposure to mechanical loading.

29

30

Why do some people manage to escape back pain even with severe spinal pathology?

Two explanations are:

1) Damaged tissues resist loading less and tend to stress shielded by adjacent healthy tissues. E.g. a collapse of disc height can lead to nearly all the compressive force being resisted by the neural arch.

2) Pain sensitisation phenomena appear to be involved in discogenic pain and probably depend on exactly how near any displaced material gets in contact with nerve endings in the outer annulus and nerve root. (Chen, Cavanaugh, Song et al 2004)

30